THE
LARYNGOSCOPE.

VOL. XVIII. ST. LOUIS, MO., MARCH, 1908. No. 3.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

RESEARCHES ON THE VOICE.*

BY E. W. SCRIPTURE, PH. D., M. D., NEW YORK.

In speaking or singing we use a current of air from the lungs to arouse vibrations in the vocal cavities. These vibrations are waves of condensation and rarefaction, or variation in the density of the air. They constitute the voice. These variations in density spread from the mouth of the speaker to the ears of the hearer. Of course, no particles of the air itself travel in this way.

Tonight I shall illustrate three methods of studying the voice, each of which has its limitations and advantages.

The simplest one is the graphic method. The most usual apparatus for this method comprises a revolving cylinder covered with paper which is coated with soot. To get records from the mouth the person speaks into a mouthpiece from which a rubber tube leads to a recording capsule. This latter is a small metal box with a top of thinnest sheet rubber. The vibrations of the voice pass down the tube and set the rubber membrane in motion. By a light straw lever the movements are recorded in the soot on the drum. In a similar manner records are obtained from the larynx, the lips and the nose.

As the usual recording drum is too small for lecture purposes, I use a wheel of glass coated with soot by being held over a candle flame. This is placed over a projection lantern so that a portion of the wheel comes where the slide ordinarily does. Any mark in the soot shows as a white line on the screen.[1] I will now use this for various illustrations of registering the voice.

* Address by invitation before the Section on Laryngology of the New York Academy of Medicine, November 27, 1907.

1. The lantern recorder is described in detail in my "Elements of Experimental Phonetics," Ch. II.

Fig. 1. Making a mouth record.

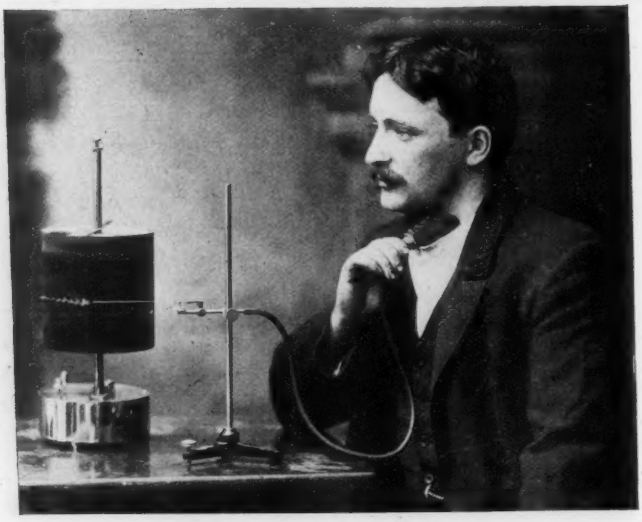


Fig. 2. Making a larynx record.

Fig. 3. Making a lip record.

Fig. 4. Making a nasal record.

Let us first get registrations of various sounds issuing from the mouth. (Registrations were made of the lecturer's voice in the words "papa," "father," etc. of a vocal teacher's voice in tones with various attacks and in tones with tremolo and vibrato, etc.) By using a little rubber bulb just in front of the tip of the tongue we can register the tongue movements. Records were made of the tongue movements when Dr. Swain spoke the alphabet. When Dr. Swain was told to keep his tongue absolutely still, but to think the alphabet, the apparatus showed movements of the tongue, although he supposed he had kept it absolutely still. Records of nasal sounds and laryngeal vibrations were also made by the arrangements shown in the Figures.

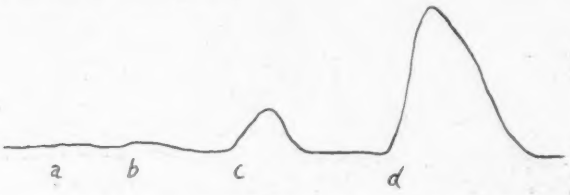


Fig. 5. Tongue movements while speaking the alphabet (Dr. Swain).

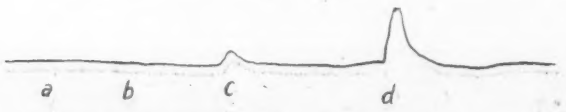


Fig. 6. Tongue movements while thinking the alphabet (Dr. Swain).

Let us now turn to the registration of the voice by the phonograph and the gramophone.

When recorded on the phonograph, the waves make indentations that vary in depth. When recorded on a gramophone, the waves consist of sidewise vibrations with a constant death.

I cannot take the time to describe the steps in the process of making a phonograph or gramophone record. The result is familiar to all of us, namely, a grooved line that can be made to talk. Suppose, now, we select a record of this kind that produces sufficiently good sounds to be considered reliable. We must then find a method of accurately tracing off this groove upon paper. As most of my work was done with an apparatus for tracing gramophone records, I shall confine myself to a description of it.[2]

2. This work has been liberally supported by the Carnegie Institution of Washington, D. C., for four years. The first volume of results has appeared as Publication No. 44, "Researches in Experimental Phonetics."

The gramophone disc is made to turn very slowly, once in six to ten hours. A steel point in a very long, light lever rests in the speech groove just as the steel point of the reproducer does; the vibrations in the groove make the lever move back and forth. A fine point at the end of the lever records the vibrations, magnified 430 times, on a long band of smoked paper.

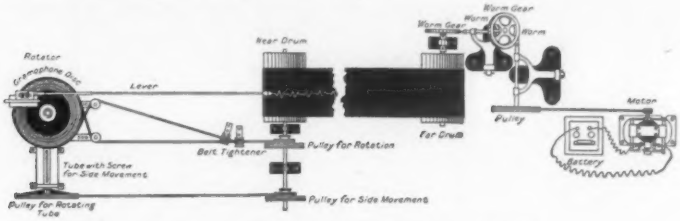


Fig. 7. Machine for Tracing Gramophone Record.

Here (Fig. 8) we have a piece out of a record of "oh" spoken by Dr. S. Weir Mitchell. The piece has been cut into four parts to get it into the column of print. We notice first that the waves fall into groups of three; each group represents one vibration from the larynx. By measuring the length of a group we can get the pitch of the tone from the larynx at each instant. We find that the length of the group steadily changes. If we indicate the pitch for each

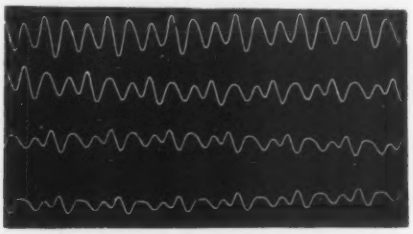


Fig. 8. Waves foom "Oh." spoken by Dr. S. Weir Mitchell.

group by a dot a certain distance above a horizontal line and connect the dots, we get a "melody plot." The melody plot for the entire "oh" of which Fig. 8 is a part is given in Fig. 9. It shows that the voice begins low, rises quite high, quavers a while, and then falls. In the melody plot we thus have a record of the emotion. This opens up an entirely new field, that of melody in prose and verse; the melodies of whole speeches, poems and songs have been obtained.

Each group in Fig. 8 comprises three subordinate waves; these indicate the tones of the vocal cavities. In the first line of the figure the three strong waves indicate that there is a powerful cavity tone an octave and a half above the larynx tone. But we notice that, although adjacent groups are similar, the form always changes slowly and steadily from beginning to end. This is true of nearly all American vowels; the sound of each one changes steadily while being spoken.

The vibrations that compose a wave group are the effects of the laryngeal vibrations on the cavities of the mouth and nose. They differ for each different vowel sound. Here are short pieces out of a number of vowels spoken by Joseph Jefferson (Fig. 10). Let us

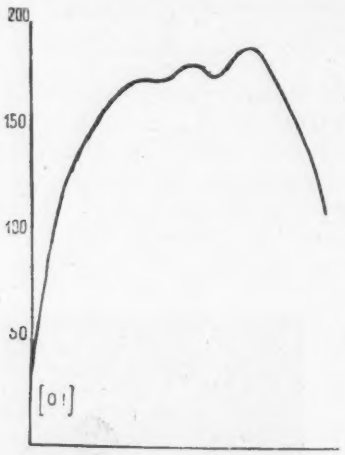


Fig. 9. Melody Plot for "Oh," sorrowfully.

notice the vowel "a" in "glass." We find a similar but weaker curve for the same vowel in "that," an almost identical curve in "schnapps," a distantly similar one in "and," and a rather similar one in "family's." The long "a" is shown in weak vibrations at the beginning of "ah." In this way we can go over the plate of curves and pick out similar or dissimilar ones with the unaided eye.

If we inquire what tones of the voice are represented by these curves, we have to face the problem of curve analysis. This is a difficult and complicated process, the analysis of a single wave often requiring whole days of computation. The results of thousands of such analyses show that the prevailing views of speech and the action

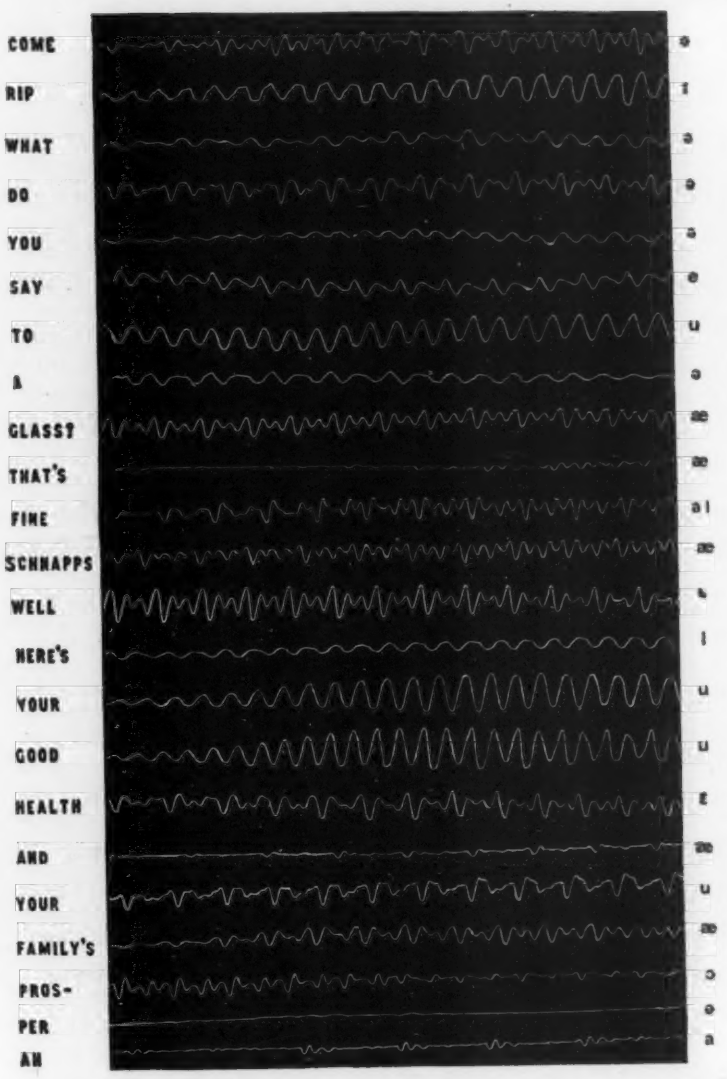


Fig. 10. Gramophone Tracing of Vowels of Rip Van Winkle's Toast, Spoken by Joseph Jefferson.

of the vocal organs are largely erroneous. Brought into connection with the facts of anatomy and physiology, they give us an insight into the human voice such as we never had before.

In the first place, it is generally supposed that the larynx contains two cords or two membranes which swing in the breath current and set the air in vibration. This is not true. The larynx contains the two "vocal lips," which open and shut by compression; the larynx thus emits a series of puffs of air, just as a locomotive or a siren does, but so fast that the puffs make a tone.

Again, it is supposed that the vocal cavities—chest, throat, mouth, nose—act like brass resonators to reinforce certain overtones of the laryngeal vibrations. This also is not true. The vocal cavities have soft walls and cannot act like brass resonators; their tones do not coincide with overtones of the laryngeal tone and therefore cannot reinforce them. The cavities are adjusted to certain tones for each vowel; the puffs from the larynx strike them and bring forth these tones.

Although this puff theory of vowel action has been definitely established, it has not yet become known to any extent, and it is safe to say that no American book that discusses the voice has gotten beyond the old Helmholtz resonator theory, and that every vocal teacher bases his or her instruction on an absolutely false supposition.

Turning now to pathology I will say that I have in preparation a study of speech in general paresis and am about to publish (in connection with Dr. L. Pierce Clarke) a monograph on the speech of epileptics. It is interesting to note that the epileptic has a distinct type of speech, which the ear can learn to recognize and use as a diagnostic test.

87 Madison Avenue, New York City.

Diphtheritic Inflammation of the Middle Ear. LEON LEWIN. *Arch. f. Ohrenh.*, Leipzig. Dec., 1904.

The author criticized Kobrak's conclusions. (See THE LARYNGOSCOPE, Vol. XV, page 164). According to Lewin, the term diphtheritic inflammation should be limited to those cases in which there is typical membrane formation, on account of the difference in the clinical course of the cases. YANKAUER.

A SUGGESTION AS TO THE PROBABLE FUNCTION OF THE MALLEUS, INCUS AND STRAPES.

BY OTTO GREENBERG, MILWAUKEE.

The part played in audition by the chain of ossicles of the tympanum is more than ever a mooted question; and is not infrequently referred to by otologists as the mystery of the chain of ossicles.

The function of transmitting sound waves from the tympanic membrane to the fenestra ovalis early attributed to the ossicles, fails to explain the hearing that largely continues after the ossicles are extirpated, nor does it account for their very peculiar structure and arrangement.

After carefully examining these peculiarities and the relation the same may bear to the rate of sound vibrations, together with Weber's law of sensation, I was led to suspect that the function of the ossicles as regards sound transmission is not merely to transmit sound vibrations from the tympanic membrane to the fenestra ovalis, and to concentrate the force of same, but, more particularly, to render equal the stimulating capacities of the high and low tones.

Other things being constant, I believe, as hereinafter more fully treated, that the higher the tone the greater is its capacity to stimulate the auditory nerve endings.

By reason of the inertia of their more massive parts, the ossicles respond differently to the different rates of vibration in such a way as to convey to the foot of the stapes less of the amplitude of a tone received at the tympanic membrane in high, than in low tones. The statement of Helmholtz that the foot of the stapes vibrates a distance of about two-thirds of that of the manubrium of the malleus may be true, but it is my belief, that this is so only in the transmission of a particular tone; being less than two-thirds in the transmission of a higher tone, and greater, in the transmission of a lower tone.

The results of research recorded by a number of investigators as well as my own investigations, and the anatomy of the parts involved are readily explainable on this hypothesis.

Within a reasonable limit, a given energy produces a sound of certain intensity of sensation or loudness, be the pitch produced high or low, as witnessed in such instruments as the piano, violin and clarionet. But during the period of a single stimulation of the auditory

nerve endings by one vibration of a tone of 100 vibrations per second, a tone of 30,000 vibrations stimulates the endings 300 times. That each of these tones be heard alike in intensity it seems that each individual vibration of the former should produce a sensation 300 times greater than that of a single vibration of the latter. But this cannot be so, for while it is true that the amplitudes of the vibrations of the respective tones do approximate such a ratio, their powers to produce sensation does not approximate such a ratio; for Weber's law amounts to this: that if a stimulus of intensity or amplitude A, causes a sensation counted as 1, a stimulus of intensity or amplitude 2A does not evoke a sensation as great as 2; and, of course, a stimulus of intensity or amplitude 300 A must evoke a sensation very much less than 300. Were it not so, a sensible stimulus added to a pre-existing strong stimulus would evoke as great an increase of sensation as if added to a weak stimulus. Now, representing the stimulus or amplitude of the tone of 30,000 vibrations by A, and that of the tone of 100 vibrations, by 300 A, it follows that A will evoke a sensation much greater than 1-300 of the sensation evoked by 300 A. On multiplying these sensations by their respective frequency, it seems that the higher the pitch the greater is its capacity to produce sensation, and the louder should it be heard, were it not, as I believe, for the interference of the chain of ossicles.

The following observation has been made by experiment according to Scripture*: The mental intensity of a sound varies as the logarithm of the physical intensity or amplitude, a relation that has been established for certain tones. The exact expression of the relation is: $I = C \log.E$, where I is the intensity of sensation, E the physical intensity of a tone of a certain pitch, and C a personal constant, and where log. indicates the logarithm with the basis e (natural, not Brigg's logarithm, approximately 2.7).

In other words, an increase in amplitude in any ratio is not associated with an increase in intensity of sensation in the same ratio but with a very much reduced increment, so that in comparison with a high tone, the greater amplitude of a low tone does not make up the loss in capacity to produce sensation by reason of its smaller number of stimuli.

If the higher the tone, the greater its capacity to produce intensity of sensation or loudness, be so in fact, then means for rendering equal the sensation of the low and high tones must necessarily

*The Elements of Experimental Phonetics, p. 109, Yale, Bicentennial Publication, July, 1902, and Fechner, Elements der Psychophysik, 2 Anfl., Leipzig, 1889.

exist. The peculiarities in the chain of ossicles are most suitable for furnishing this very means, bringing about equalization in loudness, by transmitting to the fenestra ovalis, a decreasing fraction of the movements received at the manubrium of the malleus with increase in pitch.

It will be recalled that with the exception of the articulation of the stapes in the fenestra ovalis, the ossicles are yieldingly suspended on ligaments and on the tympanic membrane, so as to be capable of almost universal movement. A structure such as this is peculiar to these ossicles; nowhere in the body is there a similar structure, and it is not amiss to attribute function thereto. Universality of movement is a necessary element in executing the function here attributed to the ossicles since each tone must be a law unto itself in respect to the character of the movement it imparts to the chain of ossicles. It may also be here noted that the short process of the incus is not anchored by ligaments in the posterior wall of the tympanic cavity, but lies free of the wall suspended near it by two fibrous bands, one on its anterior, the other on its posterior surface, so as to allow of movement in all directions, even in that of the long axis of this process.

The long process of the malleus, anchored in the Glaserian fissure, is osseous only in the new born, being entirely replaced by a ligamentous band in the adult, whereas the reverse takes place in all other osseous changes. This change from the osseous to the ligamentous is indicative of improvement in function of the latter condition. That it improves the condition for variability in character of movement of the chain of ossicles is quite certain.

The development of the ligamentous from the osseous may be explained by an increase in nutrition of the elastic constituents of the process in which the osseous do not share, and which may be brought about by the greater activity of the ligamentous or flexible elements of the process, induced by sound vibrations tending to bend the process at various points along its length, depending upon the rate of the vibration.

The distribution of weight in the ossicles is extraordinary, but such as to offer ideal conditions to inertia to resist the transmission of sound vibrations in a way as to increase the resistance with increase in pitch.

The head of the malleus and the body of the incus are noticeably large for ossicles of their size. This is not due to the requirements of their large articulating surfaces, for the cross-sectional area of

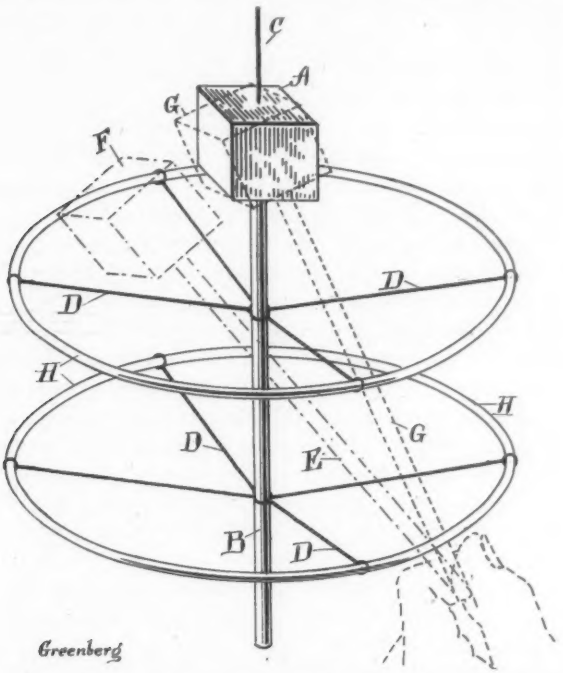
either is greater than the surface area of the articulation. In fact, the head of the malleus extends up and free, beyond the superior margin of the articulation. The head of the malleus and the body of the incus are solid throughout, containing no marrow; and since the stapes does contain marrow and the manubrium of the malleus is not solid, these anomalies cannot be due to the demand for strength, but as I believe for weight. In fact I have determined the specific gravity of these ossicles and their parts, and have found the unusual—the larger the part the greater its specific gravity. The method employed for these determinations consisted in floating the ossicles and some of their chosen parts, together with pieces of the solid wall of the shaft of the femur, for comparison, in a large test tube containing methylene bromide, which has a higher specific gravity than bone. I added ether, drop by drop, until the head of the malleus, which was first to descend, remained suspended in the solution. I then determined the specific gravity of the solution at this stage of dilution, and thereby that of the head of the malleus, employing a pyknometer devised for these experiments to attain greater accuracy.*

In like manner I determined the specific gravity of the other bones and parts. The order of increasing specific gravity is as follows: the stapes, section of bone free of marrow from the shank of the femur, the neck of the malleus, the incus, and last and greatest in specific gravity is the head of the malleus. The above order was found true in ossicles taken from six different heads. I found the specific gravity of the head of the malleus to be 2.08619, the incus 2.05311, the femur (shank) 1.83661, the stapes 1.77790, and the manubrium of the malleus 1.69875. The calf was used in these investigations. The ossicles are large and more readily removed in this than in most other animals.

It is quite probable that when the ossicles transmit sound waves, the vibrations of the head of the malleus, because of its greater mass and, consequent, greater influence of inertia at that particular point, will tend to assume a character of movement having the smallest amplitude. This tendency, of course, increases with the increase in rate of vibration, so that the higher the tone transmitted the less of the original movement at the tympanic membrane will be taken up by the head of the malleus, and the incus will therefore receive less movement and in turn the stapes and labyrinth will be so effected.

*Otto Greenberg, Science, Sept. 7, 1906, page 314.

Likewise the greater resistance offered by the body of the incus to the more rapid vibrations, because of its weight, will result in loss of amplitude at the melleo-incudal articulation, here, too, the loss will increase with increase in pitch. The prominences of the articulating surfaces will probably glide one on the other and the energy be wasted in stretching the capsular and other ligaments, rather than transmit the full vibration against the influence of inertia. The tooth of the articulating surface cannot act as a perfect lock to the



articulation, for even if it cannot glide in both directions, the articulating surfaces may glide about this tooth as center. The meniscus in the articulation points to freedom of movement and octive function.

That the ossicles are peculiarly subject to the influence of inertia is corroborated by Politzer, who, in experimental pathology, found that, while only a slight change in the movements of the ossicles takes place on weighting the tympanic membrane, a very marked change is noticed in the movements when the ossicles themselves are

weighted. As to what would occur were the head of the malleus or the body of the incus weighted in connection with the effect on this of low and high tones, cannot be determined from the experiments of Politzer.

The drawing illustrates a device with which the nature of the movements of the malleus as affected by pitch can be demonstrated. A is the body of a metallic block, secured to the upper end of a stick B. The metal block corresponds to the head of the malleus and simulates its high specific gravity; the stick B corresponds to the lighter manubrium. From above the device is suspended by an elastic band C. Assisting, somewhat, in suspending the device, and retaining it normally in a vertical position, are eight elastic bands as at D fixed to frames H.

On slowly moving the lower end of the stick back and forth to one side, in dot and dash lines as at E, and then to the other, the block moves back and forth in the opposite direction a considerable distance as at F; when the stick is moved back and forth more rapidly, the excursion of the block is very much reduced in amplitude, and when it is shaken very rapidly, though through an arc of equal degree, the block retains its position and merely oscillates about its own center of mass, as shown in the dotted lines G.

Clinical observation shows that with but few exceptions, the higher tones are better perceived than the low in ankylosis of the ossicles. This is also true where the functional power of the ossicles is otherwise interfered with or lost as by inflammation: as well as when they are entirely removed. Mader and Exner* found that high tones are heard louder than the low when sound waves are conducted to the ear through the cranial bones, as by placing a tuning fork against the skull.

Thus when sound waves reach the auditory nerves through paths other than the chain of ossicles, the higher tones, now meeting with no discrimination by the ossicles, as compared with the low, are heard louder than the latter. In other words, all tones are heard less well, in these cases, because the ossicles do not transmit them; and the higher tones are heard louder than the low because the function that I attribute to the ossicles, that of equalizing the stimulating capacities of the various tones, is absent in these cases.

In the observation of sound transmission through the skull, Mader advanced the opinion that the skull is a better conductor for the higher tones, as an explanation of the phenomenon; but a substance

*Microphonische Studien am schalleitenden Apparate des menschlichen Gehoerorganes, Sitzungsberichte der K. akad d. w. 1900.

which will conduct one tone better than another, for such a short distance is unknown to physicists, as far as I have been able to discover.

Bezold** was even led to believe from the clinical observations, above mentioned, that the ossicles transmit the low notes, but take no part in the conduction of the high ones. Of course, no line can be drawn between those tones which are transmitted one way, and those another way. It is much more probable that the chain of ossicles transmit all the notes, but vibrate differently and to a different degree in the transmission of the various tones, being specially adapted to do this, as I have already pointed out.

In the near future I hope to test the correctness of the theory suggested as by actual measurements of the excursions of the stapes and manubrium of the malleus.

Medical Dept. of Marquette University.

**Bezold, Ueber d. functionelle Pruf. d. menschl. Gehoer., Wiesbaden, 1897, § 118-122.

A Contribution to the Pathology of the Labyrinth. ZERONI. *Arch. f. Ohrenh.*, Leipzig. Dec., 1904.

Zeroni had an opportunity to observe a case of labyrinthian disease during life, and to study the labyrinth microscopically after the death of the patient. Among the many interesting features of the very complete account of the case is the explanation of the vertigo from which the patient suffered by the presence of a necrosis of the wall of the horizontal semi-circular canal.

YANKAUER.

Menigococcus-Pharyngitis as the Means of Propagating Epidemic Cerebro-Spinal Meningitis. A. Osterman. *Deut. Med. Woch.*, Leipzig. Mar. 15, 1906.

Osterman examined the mouth and pharynx of a number of healthy persons for the meningococcus and found it present in varying numbers, especially in persons living near cases of epidemic cerebro-spinal meningitis. Such persons are undoubtedly the means of spreading the disease to which they are themselves immune.

YANKAUER.

REPORT OF A REMARKABLE CASE OF SIGMOID SINUS THROMBOSIS WITH MULTIFORM SEPTICO-PYEMIC COMPLICATIONS EXTENDING OVER A PERIOD OF FOUR AND A HALF MONTHS. ULTIMATE DEATH.*

BY JOHN R. WINSLOW, M. D., BALTIMORE, MD.

I was summoned, in conjunction with Prof. Randolph Winslow, April 13th, 1901 (Afternoon), by my friend Dr. Henry F. Hill, in consultation upon a school girl, aged seventeen years, presenting the following history:

Patient had scarlet fever when 7 or 8 years of age, followed by a discharging left ear; this was arrested by treatment and there had been no discharge for two or three years prior to this sickness. Present attack began ten days previously with sore throat, fever, cough and aural discharge; the patient did not seem ill, however, until April 12th, when the temperature registered 105.8°, pulse 120,

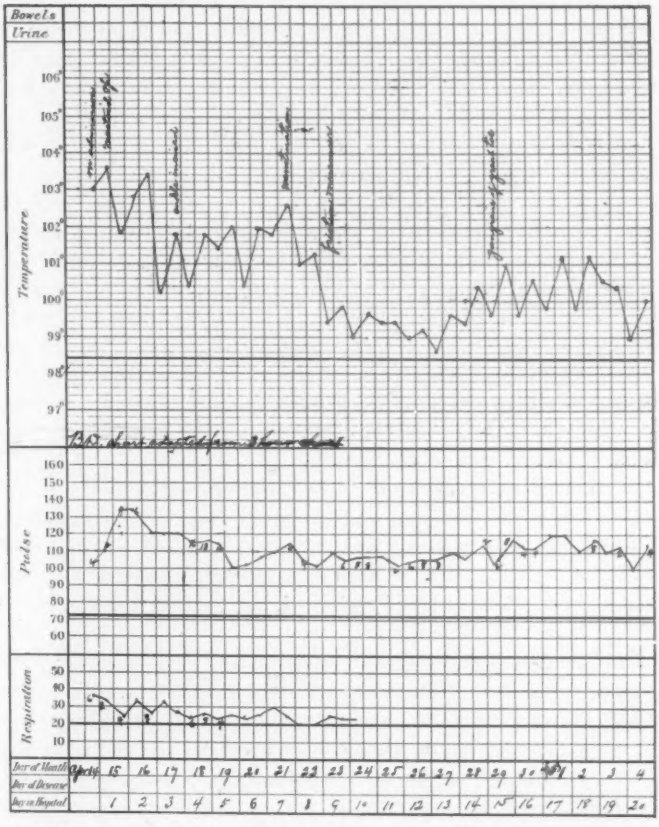
Upon examination the following day, I found the *left ear* stone deaf, but the shouting voice could be heard when almost in contact with the right ear. The left eye-lid was edematous (Stirling's sign), but could be elevated, there was some exophthalmos (phlebitis of cavernous sinus?), but the movements of the globe were good. Patient could count fingers. No ophthalmoscopy.

Edema behind the mastoid and down the neck (Griesinger's sign), well marked. The bone itself was not very sensitive. Tenderness of upper posterior cervical triangle (Whiting's sign) absent. The face and neck were moist but sweating was not profuse; no tenderness along the course of the internal jugular vein. Temperature 103°, pulse not recorded. The patient had had no chill, nor chilly sensations, no nausea, nor vomiting. The intellect was good, although she was drowsy and tremulous.

The nasal mucous membrane was intensely congested; *no aural discharge;* left posterior superior meatal wall bulged downward, concealing subjacent structures. Over this area, exquisite sensitiveness on probing. Having recently read Whiting's classical article upon the subject (Trans. Sec. Lar. A.M.A. 1899), although this was the first case that I had encountered, I had no hesitancy in diagnosing sinus thrombosis and urging immediate operation. Owing to reluctance on the part of the family to accept operation and

* Presented to the Southern Section of the American Laryngological, Rhinological and Otological Society, Baltimore, Md., Dec. 27 and 28, 1907.

questioning of diagnosis on the part of one of the consultants, it was decided to employ continuous hot bichloride irrigations, 1-5000, and to await developments. The following morning, April 14th, the patient manifested no improvement in other respects, and the additional symptom of a suspicious seizure early that morning re-



sembling a convulsion. The significance of this will be discussed later on. The family and consultants then agreed upon operation. The house being infected with scarlatina and under quarantine, considerable delay was occasioned in obtaining a permit to remove the patient. She entered the University Hospital the evening of April 14th, temperature 103.6°, pulse 112, leucocytosis 14,400. I performed the Koerner radical mastoid operation, assisted by Drs.

Randolph Winslow and E. J. Bernstein, April 15th at 2.30 p. m. The bone was very dense, a few granulations were found in the antrum but no pus. The dura was exposed in several locations and looked healthy. The sigmoid sinus was exposed from above the knee to near the jugular bulb. Its walls felt thick like rubber, but pulsations could be distinctly felt. The sinus was slit open with a bistoury under control of compresses above and below, and the blood in it was found fluid. A wire curet was inserted into the lumen and small black clots removed (streptococci). The condition was then one of peripheral thrombosis. The circulation was freely established both above and below, ligation of the jugular was not deemed necessary, and the patient's condition rendered it inadvisable. The wound was firmly packed and owing to the exposed dura and other complications, was only partially closed by suture.

Following operation, the evening temperature fell to 101.8° and which decline continued steadily until the morning of the third day, when it was 100.2°. The first complication appeared on the evening of the fourth day when the temperature rose to 101.8° and the right ankle was incised and found to contain pus (arthritis); this contained streptococci. The temperature then remained between 101°and 102° until the seventh day, when a sudden rise to 103° was found to mark the onset of menstruation.

A rapid fall of temperature ensued, and on the tenth day it was 99°, at this period a friction murmur was heard over the left chest.

The temperature subsequently fluctuated between 99° and 100° until the evening of the fifteenth day, when a rise to 101° was found to announce a new complication, gangrene of the end of the left great toe. This was amputated.

The temperature remained between 100° and 101° until the twenty-second day, when a gradual ascent began, which reached 103-4° on the twenty-third day. On this day the patient awakened with severe pain in the left side which was flat on percussion, and upon aspiration about one pint of serum was withdrawn from the left chest (Pleurisy). Following this a slight fall of temperature occurred, succeeded by a rapid rise to 104° on the evening of the twenty-fourth day.

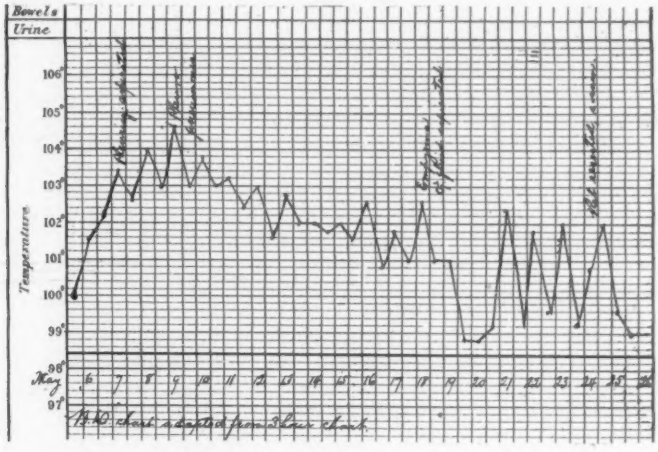
On the afternoon of the twenty-fifth day, the temperature was 104.6°, pulse 160, leucocytosis 28,000. Dry cough appeared and persisted for many days thereafter as an harassing symptom.

A diagnosis of *septic pleuro-pneumonia* was made by the consultants, Drs. Randolph Winslow, Henry Hill and myself, and a

fatal prognosis given. No one of us expected to find the patient alive the next morning.

Cold sponging was, however, instituted and stimulating hypodermic injections and enemata administered and to the tireless faithfulness and efficiency of the nurse, Miss M. Miller, now superintendent of nurses at the Presbyterian Eye, Ear and Throat Hospital, in carrying out these instructions, was largely due the salvation of the patient.

On the morning of the twenty-sixth day, the temperature was 103°, pulse 156, leucocytosis 36,000—this very gradually fell to



102.4° on the twenty-eighth day, and continued until the thirty-second day, when it began to fluctuate between 101° and 102°. On the thirty-fifth day about one pint of cloudy fluid was withdrawn from the chest by aspiration, which was found to contain pus cells and some streptococci (Empyema).

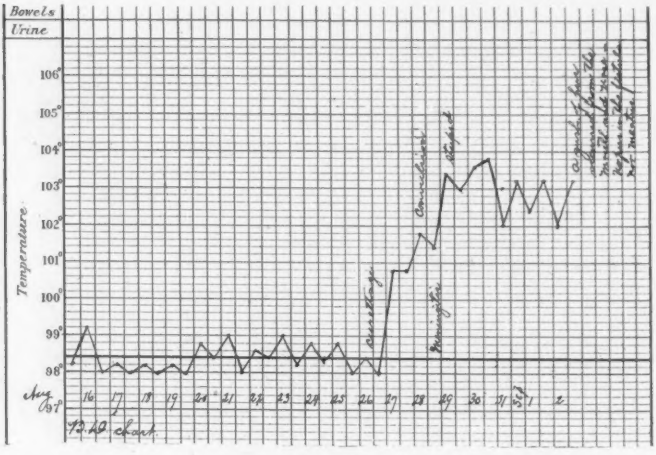
From the thirty-second to the forty-first day a typical septic chart was presented, varying from 99° to 103°. Cough was very troublesome. At this time, it was thought imperative to establish better drainage of the chest, and Dr. Randolph Winslow *resected one of the ribs* under cocaine, as the patient's condition did not admit of general anesthesia.

The temperature promptly dropped from 102° on the morning of the forty-first day, to 99° the following morning, remaining around this point until the forty-seventh day.

The temperature then began to oscillate, sometimes being as low as 99° and sometimes as high as 101.8°, without special incident, until the patient was discharged from the Hospital on the eighty-second day (July 5th).

During this period *obstipation* was a noteworthy symptom and repeated doses of calomel and purgatives had to be administered.

From July 5th until August 26th, the temperature and pulse were quite variable; the greater part of the time the temperature was approximately normal for considerable periods. The patient was going out of doors, and was in such good condition that I seized this opportunity of securing a week's vacation at the seashore.



A significant fact during this period was the sudden occurrence on several occasions of elevated temperature, at times reaching 103° without apparent reason. Preceding the final illness there had been a period of twelve days of approximately normal temperature (98° to 99°).

Wound healing had progressed favorably and the side wound was well.

The mastoid wound was reduced to a fistulous tract, not larger than a slate pencil and about 3-4 inch in depth. This had become so obstructed by exuberant granulations, as to prevent drainage; and I accordingly curetted it lightly under cocaine *mop*, with the customary aseptic precautions (Aug. 26th).

No exposed bone nor other complication was detected. The evening of the following day the temperature shot up to 100.8°,

progressively rising to 104.8°, on the fifth day, and remaining around 103° until the fatal termination on the eighth day (Sept. 2nd).

During this period there were typical signs of meningeal irritation and on one occasion a convulsive seizure occurred. No pus was present in the wound nor in the meatus. At the time of death a gush of pus occurred from the *mouth* and from the *nose*.

Thus ended a heroic battle against death in many forms, during a period of four and a half months, and were blighted hopes of a surgical triumph. No autopsy could be obtained, but the fistula and the meatus were examined carefully and no pus found.

The following queries occurred to me at the time and have never been satisfactorily answered in my mind:

What was the exact cause of death?

What was the relation of the curettage to subsequent developments? As this was performed under strict aseptic conditions, how could reinfection occur? and even so, why should the phenomena of infection be manifested at so distant a point as the *anterior* cerebral regions?

Was a thrombus released? or were strepococci, already present in the wound, stirred up to increased virulence?

Was the association merely a co-incidence, and was there a latent brain abscess from the beginning? In this connection, what was the significance of the convulsiform seizures at the onset and the termination of the illness?

It should be here stated that I learned subsequently that the patient had told some friends, just before her fatal illness and while well enough to be out doors, that she "felt queer in her head just at the beginning of her sickness."

This case has been selected for presentation from among several subsequent more fortunate ones, on account of the following points of interest:

1. Classical symptoms and early diagnosis, in a condition of peripheral thrombus.

2. Multiform complications—purulent arthritis (toe and ankle) serous pleurisy, empyema (resection of rib), meningitis or brain abscess.

3. Desperate virulence of the infection (streptococci found in all fluids), so that during four and one half months the patient was never really free from sepsis.

4. Obscure cause of death.

114 West Franklin Street.

THE "VICIOUS CIRCLE" OF THE NOSE—THE RATIONALE OF SINUS INFLAMMATIONS AND THEIR TREATMENT.*

BY WILLIAM LINCOLN BALLENGER, M. D., CHICAGO, ILL.

A somewhat extended clinical experience, and a knowledge of the anatomical arrangement of the structures of the nose, together with a knowledge of well known laws regulating the predisposition of mucous-lined cavities to infection and inflammation, have led me to hold the opinion that a large percentage of the cases of sinuitis affecting the sinuses draining into the middle meatus of the nose, may be successfully treated by intranasal operative procedures. I am likewise convinced that, only in exceptional cases is it necessary to perform extranasal operations for the cure of infection and inflammation of this group of sinuses.

When we recall the fact that the frontal and maxillary sinuses are included in this group of cells, and that divers external operations have been advocated and practiced for the relief of infections and inflammations affecting them, my claims for intranasal surgery may at first thought appear to be too strongly stated. I trust, however, in this paper, to state the facts, as I have observed them in my practice, in such a way as to substantiate the premises herein stated.

The Vicious Circle of the Nose: The frontal, anterior ethmoidal and the maxillary sinuses have a common exit, namely, the hiatus semilunaris, for the discharge of their normal and diseased secretions. While this statement is open to certain exceptions, to be noted, it is, nevertheless, in the main true. The frontal sinus does not uniformly drain into the infundibulum, but according to Logan Turner it drains directly into the middle meatus of the nose in fifty per cent of the skulls examined by him. Nor do all the anterior ethmoidal cells drain into the infundibulum. The Bulla ethmoidalis and middle turbinal cells are exceptions. While the ostium maxillare always opens into the infundibulum, it by no means constitutes the only source of drainage for the antrum in a large number of subjucts. Turner found accessory maxillary ostia in four out of nine specimens examined by him, the accessory ostia being posterior and a little inferior to the posterior end of the hiatus semilunaris. With these exceptions the infundibulum and its ostium (the hiatus semilunaris) receives the secretions from the frontal, anterior ethmoidal and maxillary sinuses.

*Read before the Twelfth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, Louisville, Ky., Sept. 26, 27, 28, 1907.

This being true, it is obvious that any condition, anatomical or pathological, causing obstruction to the flow of the secretions from the infundibulum via the hiatus semilunaris will interfere with the drainage and ventilation of one or all of this group of sinuses.

The well known law referring to the predisposition of mucous-

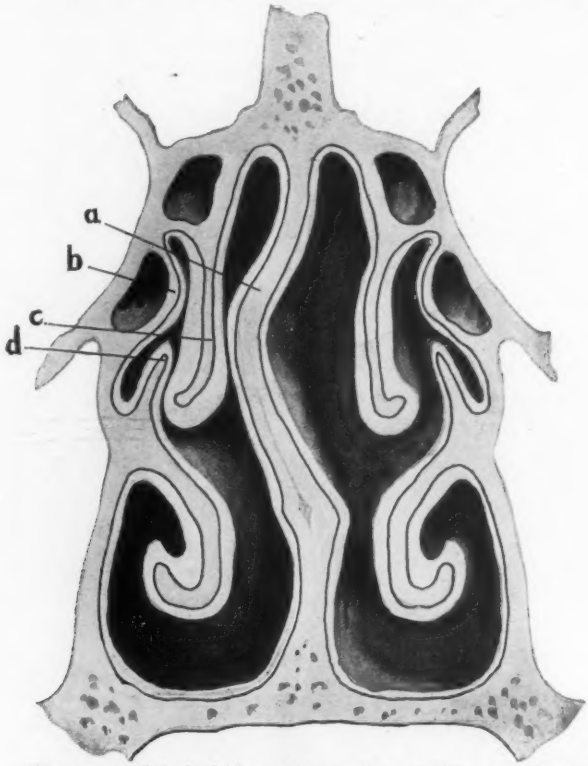


Fig. 1. A High deviation of the septum causing closure of the Infundibulum. (a) High deviation of the septum. (b) Inner wall of the bulla ethmoidalis. (c) Middle turbinal crowded against the outer wall of the nose and blocking the drainage of the infundibulum.

lined cavaties to infection and inflammation may be stated as follows:

Any cavity lined with mucous membrane is predisposed to infection and inflammation when its drainage and ventilation are impaired.

In view of this law it is obvious, therefore, that any condition, anatomical or pathological, causing obstruction to the flow of the

secretions from the infundibulum, via the hiatus semilunaris, will predispose the mucous membrane lining the sinuses draining into it, to infection and inflammation.

It is equally obvious that if the obstruction to the drainage and ventilation is removed, the predisposition to infection and inflamma-

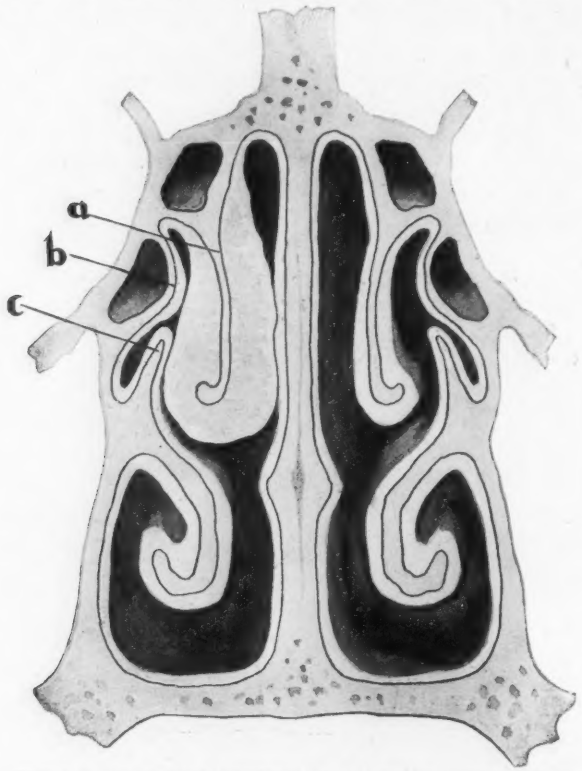


Fig. 2. Edema of the mucous membrane of the middle turbinal blocking the infundibulum.

tion will disappear. That is, whereas, the obstruction to the drainage and ventilation causes a lowered resistance of the tissues, the removal of the obstruction raises the resistance of the tissues, hence, the disappearance of the infection and inflammation.

The clinician may, with truth, say, that it is a condition that confronts him and not a theory. The question therefore, resolves itself into the query: "Does sinuitis affecting this group of cells tend to

disappear when obstructive lesions are removed from the region of the infundibulum?" According to my experience it does, though there are important exceptions.

Having outlined the hypothetical aspect of the problem, it remains to present concrete data as to the actual results obtained by

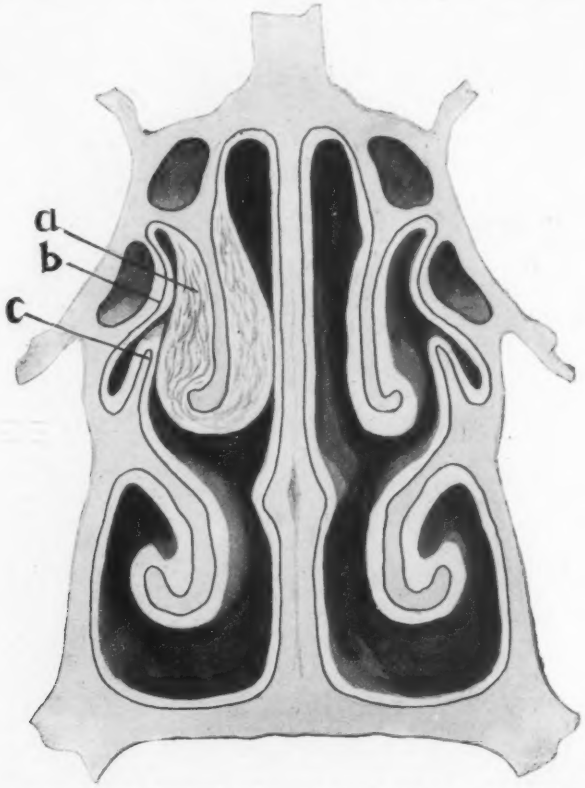


Fig. 3. Cross-section through the nose, (a) hyperplasia of the middle turbinated body which crowds the uncinate process, (c) closes the infundibulum.

procedures instituted in consonance with the hypothetical statement. In order to make the clinical deductions more clear, additional anatomical data will first be given.

(a) The nasal septum is frequently deviated towards the lateral wall of the nose in the region of the anterior half of the middle turbinated body, often crowding the middle turbinal against the outer

wall of the nose (Fig. 1), thus obstructing the drainage and ventilation of the frontal, anterior ethmoidal and maxillary sinuses.

(b) The middle turbinated body is frequently enlarged by edema (Fig. 2) hyperplasia (Fig. 3), or by the presence of accessory ethmoidal cells in its body (Fig. 4), and may in consequence block

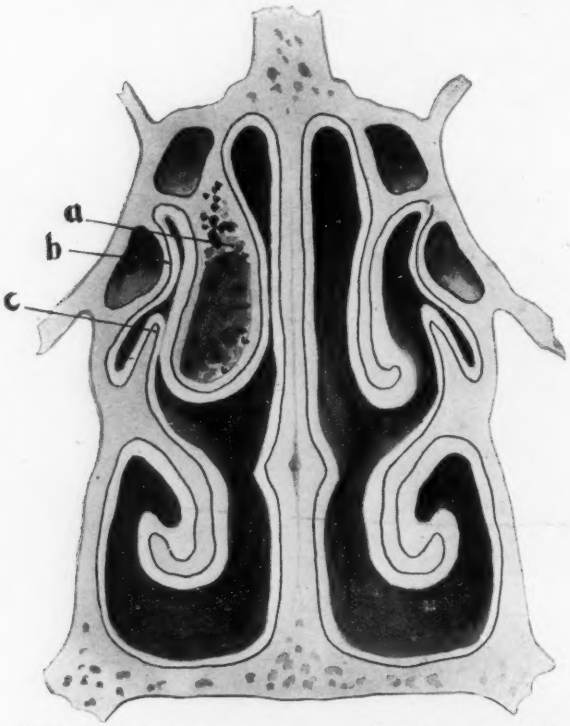


Fig. 4. A large cyst of the middle turbinated body occluding the infundibulum. (a) Cystic middle turbinal. (b) The inner wall of the bulla ethmoidalis. (c) The uncinate process or inner wall of the infundibulum or gutter.

the hiatus semilunaris; or the middle turbinal may cling so closely to the outer wall of the nose (Fig. 5) as to block the hiatus.

(c) The bulla ethmoidalis is located immediately above the hiatus, and when enlarged it may overhang and completely obstruct it (Fig. 6).

(d) The lip of the uncinate process, or median wall of the infundibulum, mal be the seat of accessory pneumatic cells which may obstruct the infundibulum (Fig. 7).

The anatomical structures described above I am pleased to call the "Vicious Circle of the Nose." (Fig. 8.)

I do not use this expression because I wish to introduce a new terminology, but because I hope by it to emphasize the clinical importance of the various anatomical structures, embraced within its

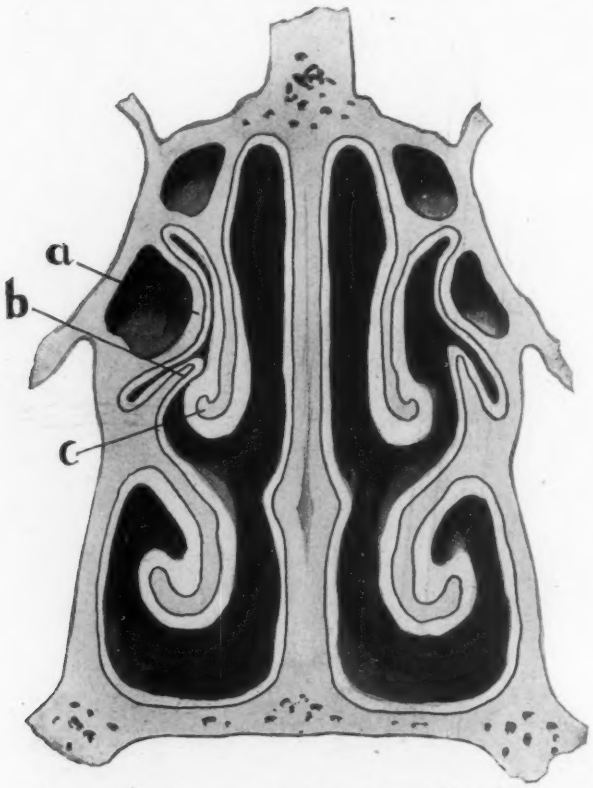


Fig. 5. Enlargement of the bulla ethmoidalis, blocking the infundibulum. (a) The inner and distended wall of the bulla ethmoidalis crowding inward and downward against the uncinate process and blocking the infundibulum. (b) The uncinate process, (c) The middle turbinal, which, on account of the bulging bulla, appears to be the cause of the blockage.

limits. I shall hereafter, in this paper, refer to the anatomical structures within this area as the "vicious circle" of the nose, because it is in this area, rather than in the sinuses, that we must look for the predisposing causes of the infection and inflammation. Finding the cause here, we should address our remedial measures to

its removal. Should these efforts fail, more radical measures may be undertaken.

Clinical Data: From an anatomical view it has been shown that in simple sinuitis of the frontal, anterior ethmoidal, and the maxillary sinuses, all of which usually drain into the infundibulum, the obstruction to ventilation and drainage is often due to the malposition, or diseased condition of the structures in the vicinity of the in-

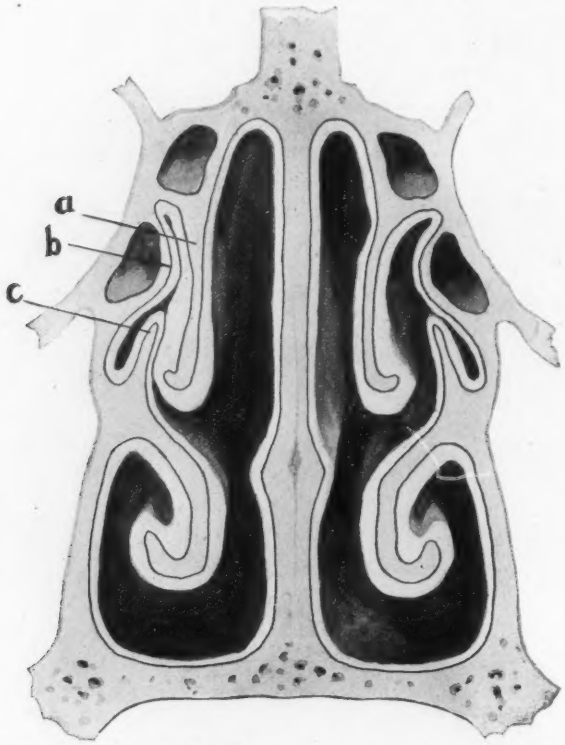


Fig. 6. The middle turbinated body clinging to the outer wall of the nose, and blocking the infundibulum.

fundibulum, rather than in the sinuses. This being true we should expect the removal of the obstruction in this region, the "vicious circle," to be followed by the relief or cure of the sinuitis. If the obstruction is located in the sinuses, or at their ostia, the removal of the structures of the "vicious circle" would not be followed by a

relief or a cure of the sinuitis. Under surh conditions it would be necessary to direct therepeutic mea:ures to the sinuses, or to their ostia. My clincal observatons cover some two hundred operative cases for chronic sinuitis affecting the frontal and anterior ethmoidal sinuses, and in but five instances have I found it necessary to extend my operation beyond the "vicious circle" of the nose. The diagnosis

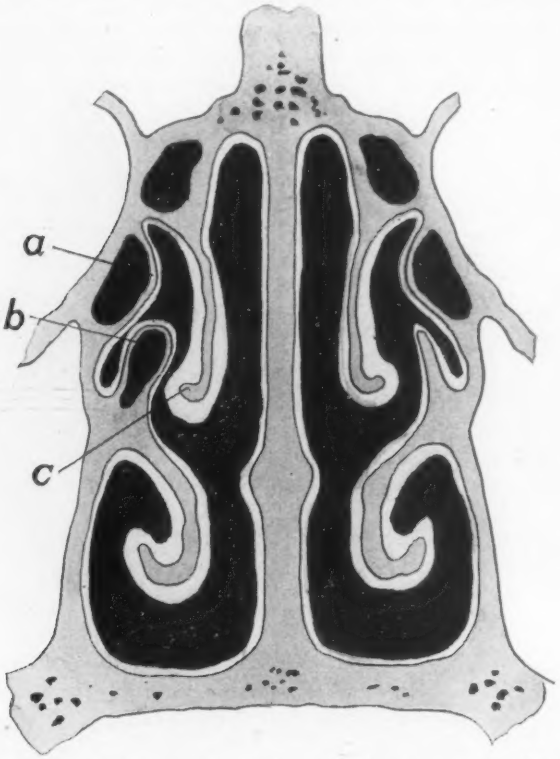


Fig. 7. Cyst of the uncinate process (b) blocking the infundibulum.

in seventy-five of these cases were confirmed by skiagraphs, and in no instance was the skiagraphic findings at variance with the diagnosis previously made. I infer, therefore, that in the earlier one hundred and twenty-five cases my diagnoses were probably correct.

In view of these observatıcns I may fairly conclude that a very large majority of the cases of inflammation of the frontal and anterior ethmoidal sinuses may be cured by limiting the treatment to

the area of the "vicious circle" of the nose. While the percentage of cases thus apparently cured by me is ninety seven and one-half, I do not wish to go on record as claiming this to be a correct estimate of the effects of this mode of treatment. There are several reasons to be offered against the accuracy of such a conclusion.

In the first place, the number of cases (200) observed by me is too small to warrant an accurate statistical statement.

In the second place, the question of diagnosis must be taken into account. Many observers only diagnosticate sinuitis when the

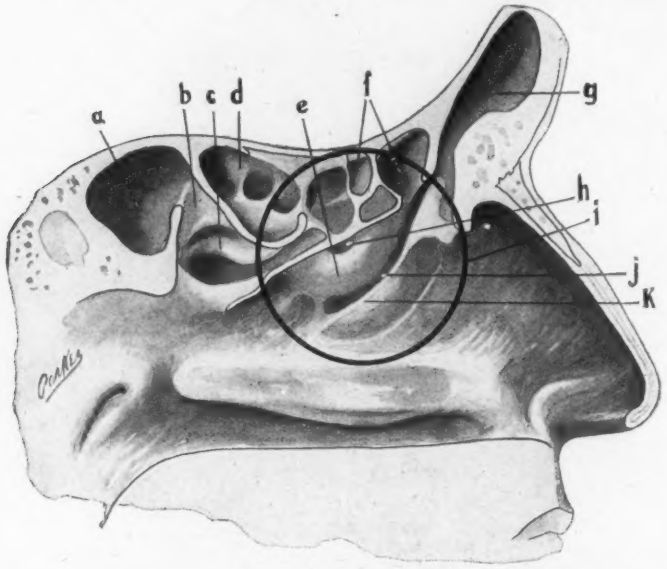


Fig. 8. Vicious Circle of the nose, the area which is often responsible for infection and inflammation of the frontal anterior ethmoidal and the maxillary sinus. (b) The sphenoidal sinus. The ethmo-sphenoid fossa. (c) The superior turbinated body. (d) Posterior ethmoidal cells. (f) Anterior ethmoidal cells draining into the fronto-nasal canal. (g) Frontal sinus. (h) The ostium of the bulla ethmoidalis. (i) Hiatus semilunaris. (k) The uncinate process or outer lip of the infundibulum or gutter on the outer wall of the nose into which the frontal, anterior ethmoidal and maxillary sinuses usually drain. The high light below and anterior to j and k indicates the inferior boundary of the infundibulum or gutter into which the sinuses drain. The middle turbinated body is removed to exhibit the anatomical details beneath it.

symptoms are very obvious, the presence of pus in the middle meatus of the nose, being the objective symptom most often depended upon. If only such cases are to be regarded as sinuitis it is obvious that a much smaller percentage would be cured by directing the therapeu-

tic measures to the "vicious circle" of the nose. In some of these cases the disease is much further advanced, and the tissue changes more pronounced in the sinuses and around their ostia, hence, in addition to the blockage of the infundibulum, the blockage from the granulations, etc., in the sinuses and around their ostia must be taken into account in carrying out the therapeutic measures. Bone necrosis and intracranial complications also call for radical surgical treatment. All cases with obvious purulent discharge into the middle meatus of the nose do not, however, come under the complicated class; many of them being amenable to treatment directed to the structures of the "vicious circle." As previously stated, only five out of two hundred cases coming under my care required radical operative procedures, and in all of these I performed the Killian operation, four with brilliant results both as to a cure and external deformity, and one with an entirely negative result.

In my diagnosis, I have included some cases in which I could not see pus though the patients claimed they frequently blew it from the nose, especially in the early morning. They complained of frontal headache either unilateral or bilateral, usually more pronounced of mornings. They also complained of dizziness of short duration, which was aggravated upon stooping. The anterior end of the middle turbinated body was often enlarged, glazed, velvety in texture, and rested against the septum. In some instances the septum was bowed in the region of the middle turbinal and forced the turbinal against the outer wall of the nose, and thus prevented free ventilation and drainage of the sinuses draining into the infundibulum. In others the bulla ethmoidalis was enlarged and blocked the hiatus semilunaris. These findings, and the cloudiness of the frontal and ethmoidal cells upon the skiagraphic plate, led me to make the diagnosis of frontal and anterior ethmoidal sinuitis.

In cases thus diagnosed I believe that ninety per cent of them may be cured by addressing the treatment to the "vicious circle" of the nose, while the remaining ten per cent will require external operative procedures. Of the cases curable by limiting the treatment to the "vicious circle" of the nose, many are curable by non-surgical methods, as the local applications of adrenalin, cocain, a ten per cent glycerine solution of ichthyol, antipyrin, etc. Still others may be greatly benefitted by divulsing the middle turbinal away from the septum, or away from the outer wall of the nose, according to its point of impediment or obstruction. In the remaining cases it will be necessary either to remove the anterior half of the middle turbinal,

break down the enlarged and overhanging bulla ethmoidalis, or even to exenterate the anterior ethmoidal cells as thoroughly as possible, and in rare instances to remove the floor of the frontal sinus by Halle's method. In those cases complicated by inflammation of the posterior ethmoidal and sphenoidal sinuses the surgical treatment should be extended to include them in its scope.

In conclusion, I wish to say that the object of this paper is to call attention to the fact that the obstructive lesion which interferes with the ventilation and drainage of the frontal, anterior ethmoidal, and maxillary sinuses is usually *not* located in the sinuses, or even in their ostia, but *is* in the hiatus semilunaris and infundibulum, or in the structures in their immediate vicinity. This being true the rational therepeutic indication is to remove the obstructive lesions from this region, the "vicious circle" of the nose, rather than to attack the sinuses themselves. In the smaller percentage of cases in which extensive tissue change has taken place, a radical external operation should be performed.

103 State Street.

Health and Development of School Children. GEO. L. LESLIE, M. A., (Los Angeles.) *South Calif. Practitioner.* Feb. 1907.

The author of this elaborate paper is not a physician. He is director of the Department of Science of the Los Angeles Schools. While the paper contains much that school teachers should know—too much for them to assimilate with their teaching duties—it is the elaborate and, in the reviewer's opinion, impracticableness of the whole article as regards the teacher, that marks it as the product of a layman.

To those teachers, however, who have the time and intelligence to master the multitude of details, and to some physicians, it has a high value. At the present time such an elaborate scheme of directions for teachers cannot equal in simplicity and practicability the instructions for the examination of school children's eyes and ears by Dr. Frank Allport of Chicago, which has won the confidence of the medical profession and boards of health and education throughout the country, and which has been made the foundation of compulsory laws in several States. EATON.

THE MANAGEMENT OF SUPPURATION OF THE MIDDLE EAR BASED ON AN ANALYSIS OF A SERIES OF 100 CONSECUTIVE CASES SEEN IN PRIVATE PRACTICE.*

BY W. SOHIER-BRYANT, A.M., M.D., NEW YORK.

Middle ear suppuration and its complications is a trite subject, but there is still a diversity of opinion as to its proper treatment. The importance of the affection is, I believe, sufficient justification for an analysis of cases, the results from which may aid the surgeon in the management of this disease. To this end, let us consider the history of these cases, the treatment used, the results following treatment, and draw therefrom what deductions we can.

ETIOLOGY—Age—The oldest patient was 77; the youngest 3 months; and the average 21 years. In detailed periods, the cases fall into the following category: Under 10 years, 22; 10 to 20 years, 16; 20 to 30 years, 26; 30 to 40 years, 22; 40 to 50 years, 9; 50 to 60 years, 3; 60 to 70 years, 1; 70 to 80 years, 1.

Sex—Fifty-five were males, and 45 were females. The largest number in any one year, 9 (during the first year.) The next largest number, 7 (in the twenty-sixth year.)

PREVIOUS HISTORY.—Nasal obstructions were considered the predisposing cause of the middle ear suppuration in forty-six cases. including three cases of misuse of the nasal douche. Only one case was thought to be superinduced by adenoid growth. There were two cases of infection from sea-breathing; from scarlet fever, one; tuberculosis, three; malignant growths, two; injury at birth, one; other trauma, one. Forty-five had no definitely assignable cause. The large number of cases due to nasal obstruction out of the total fifty-five cases where an assignable cause could be found is worthy of note; these were forty-six out of fifty-five, or 84%.

Two of the three cases of purulent otitis from nasal douching went on to mastoid involvement. Of these one was cured by operation, and one recovered without surgical interference. Thus 4% of the cases of mastoiditis were caused by the nasal douche, and three per cent of the operations for mastoiditis were necessitated by infection following the use of this dangerous procedure.

* Read before the Twenty-ninth Annual Congress of the American Laryngological Association, Washington, D. C., May 7, 8 and 9, 1907.

Both ears were affected in 8%; there were twenty-one (21%) acute cases and seventy-nine (79%) chronic cases, including forty-five (45%) simple chronic cases; twenty-four (24%) perennial cases which had suppurated continuously for over ten years; and ten (10%) cases of recurrent suppuration.

We find among the acute cases that four cases out of every five were complicated, that is sixteen (76%) out of the twenty-one acute cases.

Among the chronic cases, nine out of every eleven were complicated, that is forty-seven (59%) out of the seventy-nine cases.

Among the simple chronic cases, thirty-four (75%) out of forty-five cases were complicated. Among the perennial cases, eight (33%) out of twenty-four were complicated.

Among the recurrent cases, one out of every two cases was complicated, that is five (50%) out of ten cases.

There were eight cases of intracranial complication, including one cerebellar and cerebral abscess, epidural abscess, perisinus abscess, pachymeningitis, thrombosis of sigmoid sinus, with thrombosis of internal jugular vein; three cases of thrombosis of sigmoid sinus, including the perisinus case; five cases of epidural abscess of the perisinus variety with pachymeningitis and mastoiditis; one case of leptomeningitis with jugular thrombosis.

Mastoiditis was a complication in 51 cases; 81% of all the complicated cases had mastoiditis.

The 51 cases of mastoiditis include fifteen with complicated acute middle ear suppuration. Fifteen out of the sixteen of the acute complicated cases had mastoiditis; that is 94%. The balance of the mastoid cases, thirty-six in number, occurred during chronic middle ear suppuration. These 36 make up 77% of the complicated chronic cases.

DEFINITIONS.

The adjective *healed* is used in this article to denote all cessation of exudation and the final closure of sinuses and epidermization of surfaces.

Normal hearing denotes hearing above what might reasonably be expected in the healthy individual.

Simple chronic suppuration denotes suppuration which has passed beyond the acute stage, but has not lasted ten years.

Perennial suppuration has lasted over ten years.

MASTOIDITIS.

	Cases.	Per cent of 51 cases.
Acute	15	29%
Chronic	36	71%
Total	51	100%

Ninety-four percent of all the acute complicated cases.
Seventy-seven per cent of all the chronic complicated cases.
Seventy-one per cent of all the acute cases.
Forty-six per cent of all the chronic cases.
Eighty-one per cent of all the complicated cases (acute and chronic).

	Cases.	Per cent of all cases.
Simple chronic	30	59%
Perennial	4	8%
Recurrent	2	4%
Total chronic cases of mastoiditis	36	

Eighty per cent of the complicated simple chronic cases.
Fifty per cent of the complicated perennial cases.
Forty per cent of the complicated recurrent cases.
Sixty-six per cent of the simple chronic cases.
Twenty-three per cent of the perennial cases.
Twenty per cent of the recurrent cases.

The other complications were three malignant growths (one intracranial); five cases of caries, including one with mastoiditis; one case of spontaneous denudation of the dura mater with caries; one cholesteatome; five cases of epitympanic inflammation and perforation of Shrapnell's membrane, including one with mastoiditis and one with caries; tuberculosis, three cases; diabetes, one case.

Hearing Condition: The hearing before the commencement of treatment was largely deficient in all the cases, but none were absolutely deaf. No labyrinthine suppuration was observed.

Operative Treatment: Of the 37 mastoid operations performed, 8 were for acute middle ear suppuration and 28 for chronic. Of the 28 chronic, 9 were tympanomastoid excenterations or radical operations. One was a case of cerebral and cerebellar abscess with sinus and jugular thrombosis complicating chronic suppuration, treated by extensive exposure and drainage; the jugular was ligated, split and packed. There was one case of sigmoid sinus thrombosis, which was opened after ligating, and after the jugular was excised. This operation was secondary to a simple mastoid operation (not the author's), for mastoiditis complicating acute otorrhoea.

THE 36 CASES OPERATED ON FOR MASTOIDITIS WERE ALL URGENT CASES.

Acute cases, 8; 38% of all the acute cases; 50% of all the acute complicated cases. Chronic cases, 28; 36% of all the chronic cases; 44% of all the chronic complicated cases. Total cases, 36.

Simple chronic cases, 24; 53% of all the simple chronic cases; 71% of all the simple chronic complicated cases. Perennial cases, 3; 13% of all the perennial cases, 37% of all the perennial cases. Recurrent cases, 1; 10% of all the recurrent cases; 20% of all the recurring complicated cases. Total cases, 28.

Acute cases, 8; 8% of the total 100; 22% of the 36 operated cases. Chronic cases, 28; 28% of the total 100; 78% of the 36 operated cases. Total cases, 36.

Simple chronic cases, 24; 24% of the total 100; 67% of the 36 operated cases. Perennial cases, 3; 3% of the total 100; 8% of the 36 operated cases. Recurrent cases, 1; 1% of the total 100; 3% of the 36 operated cases. Total cases, 28.

SUMMARY OF THE AGES OF THE PATIENTS OPERATED ON FOR MASTOIDITIS.

There were seven (19%) under one year; twenty-one (58%) under ten years. The largest number next to the first year of life was in the fourth and sixteenth years, four cases each.

There were thirteen tympanomastoid excenterations; nine for extensive acute osteitis, and four for chronic purulent otitis media at the choice of the patient who would not wait for the cleansing treatment.

There were four uncomplicated cases operated upon for suppuration. These were all chronic suppurative cases. There were nine tympanomastoid excenterations demanded by acute otitis; of these six (66%) were in simple chronic middle ear suppuration; two (22%) in perennial suppuration, and 12% were in recurrent suppuration.

There was one ossiculectomy and tympanic curettage for caries of the tympanum and chronic suppuration.

The three malignant cases were treated by local excision, except the epithelioma, which had three X-ray exposures.

Convalescence of the intracranial cases was as follows: 1 cerebellar and cerebral abscess, epidural abscess, perisinus abscess, thrombosis of sigmoid sinus with thrombosis of internal jugular vein, recovered from the serious condition in 12 days, and final convalescence was complete in 49 days. Two cases of thrombosis of the sigmoid sinus recovered completely in twenty-three days. One subsequently died. Five cases of epidural abscess of the perisinus variety with pachymeningitis and mastoiditis recovered completely in 16 days on the average; longest, 27 days; shortest, 6 days.

There were 22 non-complicated mastoid operations with average length of healing 13 days; longest, 28 days; shortest, 4 days. Of the 22, there were 16 in simple chronic; average time of healing, 11½ days; longest, 28 days, shortest, 4 days. Of the 22, there were 6 cases of acute suppuration; average time of healing, 20½ days; longest, 28 days; shortest, 7 days.

The average period of convalescence of the mastoid operations in the cases of acute suppurative otitis media was 9 days longer than in the chronic—that is, the convalescence of the operations in acute suppurative cases was 82% longer or nearly twice as long as in the chronic suppurative cases.

The average time of complete healing of the thirteen cases of radical operation was 25 days; longest, 56; shortest, 8. The nine cases with acute osteitis had an average healing period of twenty days; longest, thirty-nine; shortest, eight days; five of them were in simple chronic cases; three in perennial, and one in recurrent suppuration. The four simple chronic suppurative otitis media cases averaged thirty-four days; longest, fifty-six days; shortest, nineteen days. Convalescence was complete in four months in the only case of ossiculectomy and curettage of tympanic caries.

There were three cases of malignant disease of the ear, two of the auricle and one of the tympanum, all associated with chronic otorrhœa. The results following treatment were: One recovery from epithelioma of auricle after three exposures of the X-ray; one recurrence in the stump and death after removal of the auricle for epithelioma; one case of endothelioma of the tympanum and cranium treated by surgical removal of the tympanum and exposure to radium.

The non-operative treatment of the suppuration was followed by complete healing in 15 cases of mastoiditis, in the case of diabetes, in the cholesteatoma and several others, and in all the non-complicated cases. The only exceptions were in two cases of tuberculous infection. The treatment used was what I call 'the cleansing treatment."

Of the total fifty-one cases of mastoiditis, thirty-six were operated upon; fifteen were not. Of these 15, 7 were cases of acute middle ear suppuration and 8 were chronic; 7 simple chronic and 1 recurrent. 15 cases of mastoiditis recovered without operation, 30% of the 51 mastoiditis cases.

Acute, 8; 53% of the cases of acute suppuration with mastoiditis. Simple chronic, 5; 16% of the cases of simple chronic suppuration

with mastoiditis. Perennial, 1; 25% of the cases of perennial suppuration with mastoiditis. Recurrent, 1; 50% of the cases of recurrent suppuration with mastoiditis. Total, 15.

There was one case of double mastoiditis not operated on. One ear had acute suppuration; the other, chronic. Thirty-three of the non-complicated cases were treated by the cleansing method also.

The convalescence following the cleansing treatment of five cases of attic inflammation and perforation of Shrapnell's membrane was complete. In one case, after 2 days; one after 90 days in spite of caries; one after 21 days; one after 10 days, and one after 3 days; average, 25 days. Three cases of tuberculosis; 1 convalesced in 19 days; two did not heal. One with diabetes was finally healed after 18 days of treatment.

This was a case of chronic recurrent purulent otitis. One cholesteatome in 10 months; 5 of caries, 1 in 90 days; 2 radical operations, 16 and 21 days convalescence respectively, to final recovery; 1 in 14 days; 1 curetting and ossiculectomy, four months.

Figures on the convalescence of the 37 non-complicated cases; 5 acute and 32 chronic. Four of the chronic cases had radical operations, leaving 33 cases not operated upon, 28 of them chronic. In the 28 chronic cases, the average time of healing was 11 days; longest, 56 days; shortest, 1 day.

Among the chronic cases there were eight simple chronic cases not operated upon with an average convalescence period of 13½ days; longest, 42 days; shortest, 1 day. Five recurrent with an average of 4 $^{1}/_{5}$ days; longest, 9 days; shortest, 2 days. The five acute cases had an average of 8½ days; longest, 12 days; shortest, 5 days. The recurrent did best, next the acute cases, then the perennial cases, and worst of all the simple chronic.

Twenty-four of the complicated cases were cured without a mastoid operation and 35 after a mastoid operation.

The final results in the 96 cases, or 96%, was complete convalescence and cessation of the suppuration and absence of all signs of inflammation and complete epidermization of all exposed surfaces after the length of treatment stated. No recurrence has occurred. The prevention of recurrence of otitis media purulenta when there is an open perforation of the drum membrane remaining, requires the patient to consult an otologist at regular intervals varying with the naso-pharyngeal conditions in order to have collections of epithelium, etc., removed from the tympanum. The shortest pe-

riod since cessation of suppuration is nine months. Four cases, or 4%, of the cases were not cured of suppuration; 2, or half of them, were tuberculous and continue to have recurrence of suppuration at intervals. Of the other two, one died of sepsis, due to the encapsulated streptococcus with sinus thrombosis and meningitis, and one died of carcinoma. The death rate in the final result was 2%; one of sepsis and one of malignant disease.

All the cases seen because complications developed became healed under cleansing treatment without further trouble except the four radical cases. Twenty-two or 35% of the complicated cases also healed up under this treatment.

There were 63 complicated cases of which 37 had some kind of mastoid operation performed; 26 did not. Subtracting the 2 tuberculous cases not healed, there are 24 left, which means that 24% of the 100 and 38% of the 63 complicated cases were cured without serious operation.

The case of endothelioma is considered cured from an olotogical standpoint, because the endothelioma did not recur in or about the ear after a tympanomastoid excenteration and the use of radium. Death was due to mediastinal causes.

The case of sepsis with meningitis and thrombosis of the lateral sinus (a child) died two days after the mastoid operation, due to the encapsulated streptococcus.

Hearing: In the 73 cases observed the results of treatment were: decreased hearing after a radical operation for uncomplicated chronic suppuration, 1 case; no change, 13; improved, 59. The hearing changes are noted by comparing the hearing before the commencement of treatment with the hearing subsequent to treatment.

There was improvement in 59 of the 73 observed cases, or 80%; decrease in 2%; no change in 18%. In the 59 improved, there were 17% restored to perfect hearing, over normal; 23% of the observed cases had the hearing restored to normal; 53 per cent, or 9, of these were in acute suppuration. All but one of the nine, which was not complicated and was cured in five days, had mastoiditis. Four were operated on with an average time of healing of 19 days. Four were not operated on and had an average time of convalescence of 17 days. Five, or 29%, were in the simple chronic form of suppuration; 1 was not complicated (49 days); 1 with attic inflammation (90 days); 3 with mastoiditis. Of these, two were not operated on, (2 days and 5 days respectively). The other had extensive removal of bone for mastoritsi and epidural abscess followed by recovery in

six days. There were 2, or 12%, of the cases restored to normal hearing among the perennial suppurative cases. They were uncomplicated and convalesced in one and two days respectively. One, or 6%, was in recurrent suppuration with acute mastoiditis; operation —modified radical—convalescence complete in 10 days. The average age of patients restored to perfect hearing was 29 years; oldest 77; youngest 12 years.

The remaining 42 cases showing improvement in hearing were: Acute 8, simple chronic 16; perennial 13; recurrent 5; total 42. Of the 8 acute, 3 were not complicated and convalesced in 8, 9 and 9 days respectively; 5 had mastoiditis; 2 were operated on and convalescence took place in 15 and 17 days; 3 were not operated on—convalescence in 6, 10 and 14 days. Of the 16 simple chronic, 6 were not complicated; 1 in 35 days; 1 in 1 day; 1 in 12 days; 1 in 3 days; 1 in 19 days (radical operation); 1 in 28 days (radical operation).

Of the 10 complicated cases, one with caries was treated by ossiculectomy and curettage and healed in 120 days; 1 brain abscess, etc., in 49 days; 8 had mastoiditis; 6 were operated upon—four mastoids with healing in 10, 12, 16 and 18 days respectively, average 14 days; radical operations with healing in 12 and 16 days. Two were not operated on and healed in 12 and 56 days respectively.

Of the 13 perennial cases with improved hearing, 11 were not complicated; 2 healed in 10 days; 1, in 8 days; 1, in 9 days; 2, in 2 days; 1, in 6 days; 1, in 21 days; 1, in 4 days; 1, in 18 days; and 1, in 5 days; two were complicated, 1 mastoiditis, 10 days, 1 cholesteatoma, 10 months. There was no operation in either case. Of the 5 recurrent cases, 3 were not complicated, and convalescence took place at the end of three days in each case. Two were complicated, 1 perforation of Shrapnell's membrane and attic inflammation, with convalescence in 21 days; 1 mastoiditis and radical operation with convalescence in 27 days.

Among the cases of improved hearing, there were 5 radical operations, 2 of them for uncomplicated otorrhoea; 1 brain abscess, etc.; 6 mastoid operations; 6 cases of mastoiditis not operated upon; 1 case of sinus thrombosis.

Of the 21 acute cases in our series of 100, 5 were non-complicated—1 normal hearing— and 16 complicated (mastoiditis). Of these, 8 regained normal hearing, divided among 4 operated upon and 4 not operated upon. The proportion of normal hearing following mastoiditis with acute suppuration of the middle ear is greater than in the non-complicated cases of acute suppuration; 50% of

the complicated and 20% of the non-complicated recovered; 50% of these cases of mastoiritis recovered perfect hearing; half were operated upon and half were not operated upon.

Of the 45 simple chronic, 11 were non-complicated, with normal hearing in 2 of them; 34 were complicated. Of these, 3 had normal hearing and 2 mastoiditis, upon one of which an operation was done. In the simple chronic, 11% regained normal hearing, 9% of the non-complicated and 12% of the complicated mastoid cases; 10% of the mastoid cases; 4% of the operated mastoid cases and 40% of the not operated cases. Of the 24 perennial, 8 were complicated and 16 non-complicated. Of these 2 regained normal hearing. In the perennial, 8% regained normal hearing; 12% of the non-complicated.

Of the 10 recurrent, 3 were complicated and 5 non-complicated. One regained normal hearing after acute mastoiditis and modified radical operation. In the recurrent, 10% regained normal hearing; these were 33% of the complicated; 50% of mastoiditis cases, and 50% of operated cases for mastoiditis.

Fourteen per cent of the operated cases had good hearing (normal); 40% of the non-operated mastoid cases recovered good hearing (normal); 10% of the non-complicated got normal hearing.

There were 13 cases without any noticeable change in hearing after the permanent cure; 2 acute; 3 simple chronic; 8 perennials. Of the 2 acute, 1 had tuberculosis, 19 days; 1 had extensive osteomyelitis and extensive mastoid operation, 28 days. Of the 3 simple chronic, 1 was not complicated, 35 days; 1 had mastoiditis and a radical operation, 28 days; and one had tuberculosis of the ear and did not recover. Of the 8 perennial cases, there were 3 with no complications and convalescense took place in 4, 14 and 21 days respectively; 1 radical operation, 56 days (the longest); 1 mastoiditis (radical operation) 28 days; 1 mastoiditis, epidural abscess, radical operation, 21 days; 1 caries of tympanum, 14 days; and 1 of malignant disease, death.

Among the 13 cases, there was one extensive mastoid operation and four radical operations.

Summary: We find the sexes nearly equally divided in our series. The ages of the patients cover a wide range; the youngest 3 months, the oldest 77 years. The greatest number in any one year, nine, occurred in the first year of life; the next largest number in the twenty-seventh year. From this we may deduce that the first year of life is especially productive of serious suppurative ear disturbances. The

ANALYSIS OF 100 CONSECUTIVE PRIVATE CASES OF MIDDLE EAR SUPPURATION.

	Non-Complicated			Complicated			Mastoiditis			Operation			Final Result		Average Period of Convalescence in days	Hearing after convalescence				
	Cases	Per Cent of	Per cent of non-complicated	Cases	Per Cent	Per Cent of Complicated	Cases	Not Operated	Operated	Simple Mastoid	Complicated Mastoid	Radical Mastoid	Cured	Not Cured		Improved	Worse	x Normal Hearing	Unchanged	Not Noted Condition
ACUTE (21)	5	13	24*	16	25	76*	16	8	8	6	2	0	21	....	13	17	....	9	2	2
CHRONIC (79)	32	87	41§	47	75	59§	35	7	28	16	12	13	75	4	22	42	1	8	11	25
Total (100)	37	....	....	63	....	....	51	15	36	22	14	13	96	4	20	59	1	17	13	27
SIMPLE CHRONIC (45)	11	34	24†	34	72	76†	29	5	24	17	1	5	42	3	21	20	1	5	3	21
PERENNIAL (24)	16	50	67‡	8	17	33‡	4	1	3	1	2	1	23	1	30	15	....	2	8	1
RECURRENT (10)	5	16	50°	5	11	50°	2	1	1	0	0	1	10	....	6½	6	....	1	0	4
Total (79)	32	....	....	47	....	....	35	7	28	18	3	7	75	4	22	41	1	8	11	26

* Of Acute. § Of Chronic.. † Of Simple Chronic. ‡ Of Perennial. ° Of Recurrent.

etiology shows us the importance of nasal obstructions in determining ear suppuration. These were present in 84% of the cases. The nasal douche was the exciting cause of suppuration in 5% of the cases.

We note first the large pencentage (63%) of complicated cases, which suggests that the cases were delayed too long before receiving special treatment.

We further note that the complications are most frequent in the acute and simple chronic cases, and decrease as the chronicity of the affection increases.

We see further that an ear in the stage of simple chronic suppuration is just as likely to be complicated as one in the acute stage; while one in the perennial or recurrent stage is less likely to be complicated than in the acute or simple chronic stage, and least likely of all to be complicated when in the perennial stage. In other words, the dangers are most imminent in the simple chronic and acute stages and decrease with the increase in chronicity.

There were 8 cases of intracranial complication; 5 cases of epidural abscess of the perisinus variety; 3 cases of sinus thrombosis and one case of cerebral and cerebellar abscess included in the three cases of thrombosis.

Mastoiditis appears as the most common complication, occurring in 51 cases, or 81% of the 63 complicated cases. The large proportion of 51% of mastoiditis suggests what appeared to be a sad fact; namely, that the cases had been sent to the writer only as a last resort. All but two cases of the 100 had been treated by other practitioners.

The proportion of mastoiditis is largest in acute suppuration, where it formed 94% of the complications. In the chronic cases it formed 77% of the complications. As the chronicity increases the frequency of mastoiditis decreases. In the recurrent cases of suppuration only 4% are complicated, and in the perennial 8%. From this it is evident that a long standing case of otorrhoea is proportionately harmless.

There were five cases of malignant disease of the ear with suppuration; two of them involved the tympanum, one endothelioma and one carcinoma; one involved the pinna only, an epithelioma.

Hearing was largely deficient in all the cases before the commencement of treatment.

It would seem that the cases which demanded operation when first seen might have avoided the crisis if treatment could have been

begun earlier. No case became complicated after the commencement of treatment.

There was one extensive exploration and drainage of the temporo-sphenoidal lobe and cerebellum; two ligations of the jugular vein, and 40 operations on the mastoid region including 13 radical operations, four of them for uncomplicated chronic suppurations. Two of the malignant growths were excised and one exposed to the X-ray. One case of curettage and ossiculectomy.

The case of brain abscess was absolutely healed in 49 days; one case of sinus thrombosis in 23 days; 5 cases of epidural abscess, average time to absolute healing 16 days. Average healing period of the 22 non-complicated mastoid operations, 13 days. Sixteen of them were in simple chronic suppuration, average time of healing 11½ days. The average time of the acute cases (6) was 20½ days.

The four cases on which a tympanomastoid operation was done for chronic non-complicated middle ear suppuration show an average duration of healing time, 34 days, which does not compare favorably with the duration of the healing period of the 28 chronic cases treated by the cleansing method, which averaged 11 days, or two-thirds less time.

Fifteen of the 51 cases of mastoiditis were not operated on, but were treated by the cleansing method. All the 37 non-complicated cases of otorrhoea were treated in the same way, except four, which had the radical mastoid operation performed. Fifty-five cases in all were treated by the cleansing method, all the 34 non-complicated cases and 21 complicated cases.

The average time of perfect convalescence in the five cases of attic suppuration and perforation of Shrapnell's membrane was 25 days; 1 tuberculous healed in 19 days; 1 diabetic healed in 18 days; 1 case of cholesteatoma in 10 months. The 33 uncomplicated cases healed by the cleansing method had an average healing time of 10 days. The recurrent cases did best with an average of 4½ days; worst of all were the simple chronic cases, with an average of 13½ days.

The final result of the operative and cleansing treatment was a complete convalescence from the suppuration in 96 cases without any recurrence. All the cases submitted to the cleansing treatment recovered without operation, except one which had extensive caries and did not heal until an ossiculectomy and curettage were performed. This was the only case of ossiculectomy for chronic middle ear suppuration.

The treatment of the malignant cases resulted in 1 cure; 1 local cure, but death from metastasis; 1 death from recurrence about the ear. In four cases the treatment failed; 2 cases of tuberculosis continued to suppurate in spite of the cleansing treatment.

There was one death from malignant disease, and one from sepsis and meningitis in spite of operation. This case was very far gone in general septic intoxication when she first came into our hands. The mastoid operation was performed immediately.

Our results in the three cases of malignant diseases suggest a good prognosis when the malignant cases are taken in hand early. Out of the three cases, two had no recurrence in the ear. Of these, one was entirely cured. Without operative interference, all the cases of intracranial complications would have ended fatally, giving a mortality of 8% in our total 100 cases, and 100% of fatalities in intracranial complications.

Not including the above, there were 28 operations for mastoiditis. Among these there were 7 cases of very extensive involvement of the bone which would probably have ended fatally from jugular thrombosis and general sepsis, making our probably fatal cases, if untreated, 15% of our 100 cases. Of the balance, 21, over one-half, might have been fatal if not operated upon, say 11 cases, making a total of 26 probably fatal cases, or 26% of the grand total.

This would give a probable death rate of 26% from suppurative ear disease when not treated. Our fatal septic case would undoubtedly have recovered if the operation had been performed before the general system had given way before the septic invasion, making the rate only 0 under early operative conditions.

Note the dangers concomitant with otitis media purulenta: Death 26%; mastoiditis 51%; partial loss of hearing without treatment 100%.

We see that the greatest proportion of normal hearing follows the convalescence from acute suppuration. Forty-three per cent of this class recover their hearing entirely.

The hearing following mastoid operations averaged more improvement than after the cleansing method. Also the hearing was found to be better following the suppuration when complicated by mastoiditis than when not so complicated.

The single case of decreased hearing was in a non-complicated case of chronic suppuration after the radical operation.

Seventeen cases or 23% of the observed cases recovered and have normal hearing; 80% were improved; 2% made worse, 18% unchanged.

The best hearing after the performance of the various mastoid operations was found in the case with the shortest period of convalescence.

CONCLUSIONS.

1. Purulent otitis media appears to be without danger if treatment is commenced before complications arise. In case complications have arisen the prognosis is still excellent if the cases are taken in hand at once, but with inadequate treatment the prognosis is extremely bad, inasmuch as there is a fatality of 26%.

2. A mastoid operation is not a menace to hearing, but a safeguard and gives the best post-operative ultimate results. The radical mastoid operation is not a menace when performed in complicated cases of otorrhoea and should increase the hearing.

3. The average period of convalescence is shorter by the cleansing than by the operative method.

4. The radical mastoid operation is contraindicated in cases of non-complicated otorrhoea.

5. Mastoiditis with middle ear suppuration gives better hope of the hearing than if there is no marked complication.

6. No noticeable scar or deformity follows any form of mastoid operation, when properly performed.

7. Cleansing treatment insures against the appearance of complications in all varieties of middle ear suppuration.

8. The results of treatment of suppurative otitis media compare very favorably with the results following treatment of the dry form of otitis media.

57 West Fifty-third street.

PRESIDENT'S ANNUAL ADDRESS, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

BY WENDELL C. PHILLIPS, M. D., NEW YORK.

For the thirteenth time, in annual conclave assembled, we are about to fulfill the purposes contemplated by the founders of our Society as outlined in our Constitution, as follows:

"The object of this Society shall be: the promotion of the science and art of medicine, especially in its relation to laryngology, rhinology and otology; the development of its members in original scientific work and the promotion of social intercourse."

Today, therefore, in larger numbers than ever before in our history, hailing from Maine to California, from the Provinces north of us to the Lone Star State in the South, and with hands across the sea in touch with honored co-workers of other lands, we are to join in presenting the results of our ripe experience, patient research and painstaking observation, and with friendly debate and kindly criticism to so emphasize and crystalize the truth that not only our own labors shall be set upon a higher plane, but through our published transactions the world of Laryngology, Rhinology and Otology may be aided in the monumental search for truth.

The three nations especially represented here to-day, friendly as they are in all their relations, and particularly so in matters pertaining to science, are far in the vanguard in achievements in the specialties which we have the honor to practice. Indeed, so friendly are their relations, both national and scientific, that with one accord, with a single bumper, and in the same breath, we may give utterance to the national salutations, "Hoch der Kaiser," "God Save the King," and, in our more youthful American enthusiasm, "Hurrah for Teddy Roosevelt!"

Among the pleasures associated with the presidential office is that of extending a cordial greeting to the members and guests who honor us by their presence upon this occasion, and on behalf of the members residing in New York and vicinity I give you the hand of welcome to our city, and also to this notable building which has been dedicated to the science of medicine and surgery.

The New York Academy of Medicine, with its active membership of one thousand, with its thirteen sections, each holding monthly meetings, supplemented by bi-monthly general meetings, and with the second largest medical library in America, opening wide

* Read before the Thirteenth Annual Meeting of the American Laryngological, Rhinological and Otological Society, New York City, May 30, 31, and June 1, 1907.

its doors to all national societies free of charge, is a monument to medicine of which all New York physicians are justly proud.

My worthy predecessors in this honored office, aided by councils composed of our ablest men, have conducted our affairs with marked wisdom, safeguarding our membership, outlining our scientific programs, and exercising a wise watch-care over our transactions, with the result that in a few short years we have reached an enviable position among our national medical bodies.

It has been my pleasure to be present at all the national meetings, and to be officially connected with the Society from its inception. This relationship, continued by your pleasure, has enabled me to closely watch our growth. The duties have been made pleasant and the burdens light as a result of the cordial support, friendly greetings and kindly encouragement of the entire membership, and whenever the years of the decline shall come, as come they must, not the least among my reminiscences will be the great pleasure derived from your confidence and friendship in desiring me to remain so long in an official relationship, which has finally resulted in the bestowal of the highest honor in your power to confer. Need I say more of my appreciation?

During the present year four section meetings have been held. Your president was able to attend three of them. These meetings were all of high order, with discussion so free and full that it was difficult to complete the programs; indeed, at one meeting several papers were not read for lack of time. A total of sixty-three papers appeared upon the four programs and many of them gave evidence of marked ability and originality. From every possible standpoint the results have shown the wisdom of maintaining the section meetings. In fact, with our present membership it would be impossible with a single annual meeting to arrange a program which would permit the reading of so many papers and the opportunities of many of our members to present communications would therefore be proportionately handicapped. The section programs are necessarily largely miscellaneous in character, and they should remain so in order that individual members may bring into prominence the results of their special work along any line.

Under our By-Laws the transactions of the sections may be edited and abstracted by the publication committee.

The section meetings benefit the Society in another way not usually appreciated by the membership at large, in that the council is thus left free to construct the program for the annual meetings. This allows free and comprehensive presentation of topics of widespread interest and importance to the membership, and all may be

done in proper sequence. The present program is largely of this type, the main topics having been decided upon by the Council after mature deliberation. It is my belief that this plan should not only be followed but perfected; and in the future it may even be found wise for the Society to vote upon the topics which are to be presented at its annual meetings, and even to suggest the names of those who should be invited to prepare the scientific papers. With this general plan for the construction of programs I am in full accord.

It is fitting at this point to commend the work accomplished by our four vice-presidents this year. A vice-president in this Society is not elected for purposes of ornamentation, or simply to assume the duties of the president in his absence, but he must arrange for and conduct the scientific meetings of the section which he represents. The results of the labors of your vice-presidents for the present year have given full evidence of your wisdom in their selection.

At the last annual meeting the Society appointed a committee to make a much-needed revision of our Constitution and By-Laws. During the year this committee has given much labor to the work of revision and their report, which is in your hands, recommending amendments, has received the full approval of the Council, and now awaits your consideration and vote. I heartily recommend the adoption of all the improvements and changes suggested by the committee.

It becomes my say duty to chronicle the death of two of our members, Doctor S. E. Solly, of Colorado Springs, and Doctor William P. Brandegee, of New York. A third death from our former members is that of Dr. J. B. Stone, of New York, who resigned his membership about two years ago on account of continued ill health.

Dr. S. E. Solly was the fourth president of this Society. He practiced his profession in England until ill health necessitated his seeking a different clime, and finally settled in Colorado Springs, Colo., in 1874. Here he ministered to the suffering multitudes who, like himself, had journeyed to this promised land. He was kindly in spirit, gentle but yet manly in manner, with an ever-ready wit, and equipped with a good mind and proper preparation for his life work. He succeeded not only in winning the highest esteem of his patients, but in gathering to himself the warmest friendship of his professional brethren.

William P. Brandegee! How the mention of that name thrills

those of us who labored by his side in the hospitals and societies, where one's real nature crops out in the lesser details of almost constant association. His deep, melodious voice always struck a joyous note. When adversity came he was heroic, cheerful, and without cowardice or faltering. I never heard one unkind word spoken of him. He served as an assistant surgeon, also first in the Manhattan Eye, Ear and Throat Hospital, and at the New York Eye and Ear Infirmary from 1896 until the time of his death. The esteem in which he was held by his co-laborers in the New York Eye and Ear Infirmary was beautifully shown by having his chair in the clinic room vacant for over thirty days subsequent to his death, during which time a large vase upon his cabinet was daily replenished with beautiful flowers. Just as he was about to reap the full fruits of his constant toil the Great Reaper gathered him into His harvest.

The Council has appointed members who have been requested to prepare obituaries to be presented at this annual meeting.

A word as to our recent achievements. A little more than one year ago the Council set apart from its funds a sum of five hundred dollars designating it as an original research fund, from which a reward could be made to any member whose labors in the field of Laryngology, Rhinology or Otology should be productive of results showing originality. This was not done for the purpose of remunerating a member for his labor, but to enhance and dignify his achievement by a substantial acknowledgement, designed to confer upon him especial honor and incidentally to partially reimburse him for his necessary outlay in conducting experiments and research. One carefully prepared essay was submitted last year, but was not deemed quite up to the standard required by the Council in conferring this prize. During the present administration no essay has been submitted.

It is a pleasure also to state that the Society was enabled to set apart a further sum of one thousand dollars as a foundation for a permanent fund. This amount has been placed at interest and it is hoped that we may be enabled to add to it from time to time until it shall reach an amount adequate to produce an annual income sufficient to cover at least the expenses connected with all prize essays and scientific achievements. The treasurer informs me that the balance in the treasury at the present time is sufficient to warrant the addition of a further sum of $1,000 to this permanent fund. In order that we may legally hold and invest such funds, steps have been taken to have our Society incorporated.

My predecessor, in his masterful annual address, expressed a hope that ere long our Society would take steps to publish its own journal, predicting that "such a journal would immediately take its place as a recognized authority, and would be read by every laryngologist, rhinologist and otologist from the Atlantic to the Pacific," and stated that he was firmly convinced "that it would be self-supporting from the start, and as it would be the natural channel for the Society's transactions it would save us the separate cost for our annual publication, which is no insignificant item in our yearly budget." His recommendation was taken up by the Council and a committee appointed to report at the next annual meeting. The only real objection raised thus far has been the fear that it might be a failure financially. I heartily concur with Dr. Logan's views, and sincerely hope that in the near future we shall publish a journal, the standard of which shall be of the highest order, devoted to the specialties which we have the honor to practice.

Should it be deemed impracticable for any one society to assume the responsibilities connected with the publication of a journal, the desired end might be accomplished by enlisting three or more of the American societies in the project.

This Society, during its entire existence, has been singularly fortunate in the selection of the members who have served upon the Council, and the past year is no exception. Your President acknowledges his great indebtedness to this wise body who have made all needed sacrifices of time and expense to fulfill their obligations. Several meetings have been held, all characterized by harmonious action, slight differences of opinion always giving way to the majority vote, and all matters of importance have been subjected to the most careful consideration and discussion. The President has received full and hearty support upon all measures relating to the best interests of the Society.

Our new Secretary has also exhibited marked ability and has conscientiously fulfilled the great demands required by this important office.

Permit me, at this juncture, to offer a few comments upon the question of absolute accuracy and truthfulness in reporting the results of our scientific labor. Without wishing to sermonize, or in any manner reflect upon the membership of this Society, I do wish to plead that our entire membership, whenever reporting the results of work, shall observe the strictest truthfulness of statement, fearlessly reporting the unfavorable as well as the

successful, without selection, and never claiming complete cures in cases that have been but partially successful. To be more explicit, should an operation upon an accessory sinus be reported as a cure when a discharge of pus still remains? Should a report covering a large number of radical operations for the cure of chronic purulent otitis media be published claiming cures without the qualification that in a considerable proportion of such cases more or less aural discharge continues; or should such a series of cases be reported without a mention of the fact that accidents, complications and even fatalities have occurred, although in no wise due to carelessness or lack of skill on the part of the operator? It is my belief that the large majority of the membership of this Society are above criticism in this regard, and that they are possessed of the necessary moral courage to enable them to assume the highest possible standard in this matter. Honest errors in judgment must be expected and condoned. In the general run of published articles the experienced are usually able to read between the lines the evidences of wilful and dishonest neglect to fully report the unfavorable, but those less experienced are liable to be led into grave errors in following the teachings of men of this character. My plea is that the membership of this Society shall, with the finest *esprit de corps,* regardless of personal aggrandizement, in every instance exercise the greatest possible watch-care in their published articles, that such publications shall withhold no unfavorable results. A society with a reputation such as ours would become under such circumstancs would be the envy of the world.

The following letter was recently received by the Secretary of our Society:

(Copy.)

New York, December 29, 1900.

Dr. T. J. Harris, Secretary,

American Laryngological, Rhinological and Otological Society.

Dear Sir:—Will you do me the favor to inform me whether your Society has ever adopted an official nomenclature for diseases, and if so would it be possible for you to send me a copy thereof?

While the Census Bureau, United States Public Health and Marine Hospital Services and some State Boards of Health have adopted the Bertillion nomenclature, there is still much variety in nomenclatures both of diseases and operations, and it would be a matter of interest to hospitals to have a nomenclature come from so an authoritative a body as yours.

Thanking you for any information you may be able to give me in the matter, I am, Very truly yours,

(Signed) S. T. ARMSTRONG.

General Medical Superintendent, Bellevue and Allied Hospitals of New York City.

This letter calls attention to a matter of much importance. During the past two years I have had occasion to scan many of our text-books, journals and reprints which are published in the English language, and more recently I have compared the nomenclature employed in several of our hospital reports wherein diseases and operations are recorded. The variations in nomenclature are many, resulting in considerable confusion. It would add much to the harmony of our publications if an official nomenclature were adopted, and I recommend that a committee of this Society be appointed to undertake this work, with the power to request representatives of similar societies to co-operate. By this means it will become possible to devise a nomenclature covering the diseases and operations of the ear, nose and throat which can be adopted and employed by English-speaking otologists, rhinologists and laryngologists. I further recommend that a reasonable sum be drawn from our treasury to cover the necessary expenses of said committee.

It was my original purpose to incorporate in this address a brief resumé of the year's progress in Laryngology, Rhinology and Otology, but the time limit has already expired, and I must give way to the fruitful scientific program prepared for you.

It is a pleasure to welcome one of our distinguished foreign members in the person of Prof. G. Killian, who has journeyed to America in response to our invitation to present in person the results of his fruitful labors in the specialties covered by this Society. Many of us have been his pupils, and all have perused his writings. We give him our heartiest welcome and hope that his visit to America will convince him of the sincerity and earnestness of his confreres in the younger country, and of their desire to place these specialties upon the highest possible plane of scientific progress.

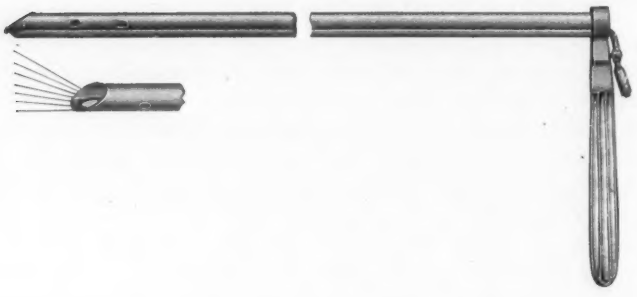
In conclusion, allow me to once more express my keen appreciation of the honor conferred in choosing me to preside over your deliberations. Hoping for your forbearance, and that my shortcomings may not mar the tranquility which should attend the official proceedings of this body, I now invite your attention to the scientific program which has been prepared for your consideration, and declare the thirteenth annual meeting of the American Laryngological, Rhinological and Otological Society open for business.

40 West Forty-seventh street.

A NEW BRONCHOSCOPE.

BY CHEVALIER JACKSON, M.D., PITTSBURGH, PA.

For some time past I have been using a modified form of my bronchoscope, which with the slide speculum renders bronchoscopy *per os* easy. No more than a few seconds are necessary in the average case, and any man, woman or child can be bronchoscopized through the mouth, provided there is no ankylosis of the vertebral articulations. I have passed it upon an infant four months of age, in whom



as clear a view of the bronchi was obtainable as through the largest sized instrument practical with an adult. Two sizes are sufficient, 5 mm. by 30 cm. for children, and 7 mm. by 40 cm. for adults. A third size 9 mm. by 40 cm. is occasionally very useful, but is not essential. The diameters given are of the lumen of the tubes.

Park Bldg.

RETENTION IN THE MAXILLARY ANTRUM OF AN IRON BOLT THREE-EIGHTHS OF AN INCH IN THICKNESS AND ONE AND FIVE-EIGHTHS INCHES IN LENGTH FOR A PERIOD OF FOUR YEARS WITHOUT IMPORTANT UNPLEASANT SYMPTOMS.*

BY JNO. O. MC REYNOLDS, M. S., M. D., LL. D., DALLAS, TEXAS.

The patient, Mr. W. M. C., an electrician, 36 years old, came with the following history:

In February, 1903, while romping with a boy, he was thrown forcibly against the lock of a screen door inflicting a wound along the infraorbital ridge, but without producing any disturbance whatever of the eye. The wound through the soft tissues was closed with four stitches by the family physician who did not apprehend that any injury had been sustained by the bony structures beneath.

There was some bleeding from the nose at the time of the accident, but no significance was attached to it. The external wound healed promptly by first intention and there never developed at any subsequent time any evidence of a purulent accumulation within the antrum. For a few weeks, two years after the injury the patient suffered somewhat with what he called facial neuralgia on the injured side, but it passed off completely without creating any suspicion of a foreign body.

After the accident it was discovered that the screen door lock had disappeared and a search was instituted for it, but without avail. About two years ago, the patient observed that the two posterior molar teeth of the upper jaw on the injured side were becoming loose, and this condition gradually became more marked until in October, 1907, more than four years after the injury, the patient with his fingers extracted the two loosened teeth and then discovered a hard foreign body presenting at the opening thus produced. After a considerable amount of speculation as to the nature of this unsuspected intruder the bolt was easily removed by the astonished patient, who was then able to explain for the first time the mysterious disappearance of the screen door lock after the violent collision several years ago.

The case is one of interest, as it illustrates the high degree of toleration of foreign bodies which the maxillary antrum may endure.

Wilson Building.

*Read before the Southern Section of the American Laryngolical, Rhinological and Otological Society, Baltimore, Dec. 27, 1907.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, January 22, 1908.

WOLFF FREUDENTHAL, M. D. Chairman.

PRESENTATION OF PATIENTS.

A Case of Neglected Syphilis with Marked Destruction of the Nose, Nasal Cavities and Tongue. By J. H. ABRAHAM, M. D.

Mrs. U., 44 years of age, married 26 years. Husband died eleven years ago of typhoid. Husband was well until his last illness. Has had four children. One was still-born, two died in infancy of summer complaint, one is 24 years old and in good health. Patient has always been well until her present trouble, which began four years ago, when she noticed a discharge from her nose and a marked nasal obstruction. Then she noticed that her nose was flattening, and finally it ulcerated and left an opening. Her upper teeth began falling out at the same time. Two months ago she began to notice a peculiarity in her speech. Regurgitation of food through her nose began about a month ago. A week ago she noticed a soreness of the tongue. She now has a complete loss of the bridge of the nose. Both nostrils have coalesced and are continuous above, with an opening which reaches almost to the level of the eyebrows. There is a large perforation in the hard and soft palate, about half an inch wide and two inches long. The septum is entirely gone. There is a broken-down gumma on the edge of the tongue.

The patient has had no treatment for her trouble until she applied for it two weeks ago. She is now getting intramuscular injections of a ten per cent emulsion of salicylate of mercury twice a week beginning with five minims and increasing one minim each dose up to ten minims. She is also taking K. I. by mouth, beginning with five minims t. i. d. and increasing one minim each dose. When last treated the gumma on the tongue had entirely disappeared.

Tubercular Ulceration of the Soft Palate. By J. MCCOY, M. D.

The patient, a young man 37 years of age, applied a week ago for treatment at the clinic. He gives a history of having had more or

less lung trouble for five years. Two years ago he had night sweats, and since has had more or less of these, together with cough and expectoration. He was sent to the clinic by Dr. Bull, of Jersey City, for painful ulceration of the throat. Examination revealed superficial painful ulcerations involving the entire soft palate, uvula, and pillars of the fauces. It is rather unusual to see a case of tuberculosis with extensive ulceration of the soft palate and so little manifestation in the larynx. The larynx showed infiltration of right artyenoid and epiglottis.

A section was removed from each side of the throat and demonstrated the presence of giant cells and tubercle bacilli in the tissue, so that there can be no doubt of the correctness of the diagnosis.

DISCUSSION.

DR. FREUDENTHAL said that on first inspection the case seemed more like a syphilitic than a tuberculosis lesion, but as Dr. McCoy had investigated it carefully there could be no doubt of its tubercular character. He himself, however, had never seen such a lesion in a tuberculous patient.

DR. MCCOY replied that it impressed him as a typical tubercular lesion. It was pale instead of red, as in syphilitic lesions, it was superficial, and there was marked pain. These points seem to mark it as distinctly tubercular in character.

DR. FREUDENTHAL remarked that it might be owing to the quality of the light, but that the lesion had not seemed pale to him, and there is often pain in syphilitic lesions, though not so commonly as in tubercular ones.

Abscess of Both Nostrils, with Saddleback Deformity Corrected by Paraffin Injection. By HARMON SMITH, M. D.

The patient, a woman aged 37, came to the clinic August 7, 1907, referred by Dr. George Brewer, complaining of inability to breathe through the nose owing to stenosis of the vestibule of each nostril. She also felt that possibly something might be done for the external deformity.

Nose was broken when a child of three years, after which an abscess of the septum formed, followed by destruction of the septum. Fourteen years ago, Dr. W. T. Bull inserted a silver plate for the restoration of the bridge, which remained in place for three years giving most satisfactory results. However, it worked itself out, and Dr. Weir inserted a celluloid plate which came out in six weeks.

Examination on admission to the hospital showed nearly complete atresia of both sides, also entire destruction of external car-

tilaginous septum, and some external scars where the two plates had extruded.

The two nares were opened by free incisions and some of the scar tissue removed. Two hollow splints were then placed in position and kept there continuously except when the nostrils were cleansed. She returned to her home in Utica after a month or so and took care of the splints herself, returning to the clinic January 2, 1908, when paraffin was injected to correct the external deformity. She had only one injection, with the result as shown. Another injection will be made before she returns home.

A Case of Trichinosis Involving the Upper Respiratory Air Passages. By J. A. MacKenty, M. D.

DISCUSSION.

Dr. David Bovard, Jr., said that his interest in the subject of trichinosis dates back about 15 years when, as ambulance surgeon he brought into the Presbyterian Hospital a family of three, all of whom had the disease. At that time such cases were not common, or at least the recognition of them was not frequent. After this his interest slackened until about two years ago when, in five months, five cases were admitted to the wards of the Presbyterian Hospital, and it seemed evident that such cases were becoming very common and that there might be causes leading to an unusual number of cases. Since then there had been no such succession of cases at any time, but in the course of a year there are usually two or three cases in the wards.

The clinical picture as seen in the hospital is nearly always suggestive of typhoid fever. The patients have fever, are prostrated, anaemic, dull, lethargic, and almost always impress the house staff as having typhoid. There are usually some suggestive features, such as edema of the face and lids—very marked and looking like the edema of Bright's disease—which, taken with the general condition of the patient put one on the track of the infection. There is regularly a leucocytosis, which typhoid patients have not. In some instances, however, this is so slight that the patients still pass as typhoid cases, and it is only by making a differential count that we differentiate the disease from typhoid., there is an eosinophilia, as first pointed out by Dr. T. R. Brown of John Hopkins, which runs from ten to as high as eighty per cent. Putting together the fever, the edema of the face, the leucocytosis, and the eosinophilia, we have a clinical picture which indicates quite positively that we are dealing with trichinosis. There have been altogether about ten cases in

the Presbyterian Hospital, in every one of which the diagnosis has been confirmed by examination of the muscle tissue. A very small bit of the muscle is required to satisfy the conditions and the trichinæ are regularly found. They are imbedded in the muscle and present a picture of interstitial myositis which is highly characteristic.

The difference between the occurrence of the disease in this country and on the European continent is very interesting. In Prussia trichinæ are found in the hogs in the proportion of three in 10,000; in the United States the ratio is very close to three per cent. That is, we have nearly 100 times as much trichinosis in our hogs as is found in the Prussian. As to trichinosis in man, we have say twenty-five cases a year, while the Kingdom of Prussia reports over 200 cases a year, so that in man we see one case in this country to approximately ten in Prussia. Making allowance for the difference in population, the disproportion is much greater. The difference in figures is party explained by the difference in food in the two countries. Few of our people eat pork raw, whereas it is quite common for the Germans to do so, in the form of sausages, etc. In this way they ingest living larvæ which then develop readily in the intestines. That is the only explanation we have for the discrepancy in the occurrence of the disease here and in Prussia, but still it seems remarkable, considering the large number of German people we have in the city of New York, that we do not more frequently recognize it. He was inclined to agree with Mr. MacKenty that one reason accounting for the disproportion is that we are not sufficiently alert in suspecting the disease, or it would be recognized more frequently

Dr. Frank H. Parker had reported his observations on ocular conditions in trichinosis and in some cases the eye symptoms were the first manifestations of the disease. Dr. MacKenty reports cases where the laryngeal or throat symptoms were the first indications of the disease. Doubtless other specialists might find the first manifestations of the disease in their territories. There is little doubt but that if we were more alert in regard to trichinosis we would recognize more of these cases than we have done in the past.

Hematoma and Abscess of the Septum. By J. E. NEWCOMB, M. D.

Dr. Newcomb read a paper with this title, including also consideration of those cases styled perichondritis serosa and cysts of the septum. The term perichondritis is objectionable, as all the layers of the septum are involved. The septum was described in its developmental relations and special emphasis was laid on the fact that

it was in its adult form a fusion of two layers. The most frequent cause of any of the lesions considered was trauma which might separate the two plates and so produce a swelling in each nostril or might fracture the cartilage so that the blood would run through from one side to the other.

Haematoma without trauma might follow severe influenza attacks. Abscess had been recorded after influenza, typhus and typhoid fevers, variola, erysipelas, sinus disease, larvæ in the nose, syphilis, tuberculosis, dental cysts and caries, glanders, anthrax and measles. In all cases there is more or less destruction of the quadrangular cartilage, though if the muco-perichondrium is left, the loss is made good to a varying extent.

It is estimated that the lesions considered occur once in about 1500 to 2000 cases in rhinological practice. It is difficult to say why they are not more common in view of the frequent trauma to which the nose is subject and the thinness of the mucosa at the anterior inferior end of the septum. Infecting micro-organisms very easily gain access here to the deeper parts. It has been suggested that the bactericidal action of the nasal mucous overcomes germ activity to a greater or less degree.

The author passed in brief review the symptoms of the condition and then took up the matter of treatment. Hematomata may subside under the usual treatment for such a lesion. Free incision is called for in all cases of suppuration and the freer and earlier the incision the less liability of deformity. This deformity is due not so much to loss of the quadrangularis as to destruction of the small cartilaginous plates on the dorsum of the nose connecting the shield cartilage with the nasal bones

Dr. Newcomb's personal experience comprises three cases of hematoma and fourteen cases of abscess. Of the entire number, eleven were due to trauma, the others to unknown causes. One of the haematomas came on without known cause, but a history of influenza was wanting. One subsided while the other two went on to suppuration. The ages of his patients varied from two to fourteen years. The ages of the patients with haematomas were respectively two, eight and eighteen years, the youngest being a case without known cause. In the abscess cases the time elapsing between trauma and appearance of symptoms varied from five to twenty-one days. None of the cases presented any special features. As long as they remained under observation no deformity was noted.

DISCUSSION.

DR. EMIL MAYER said that when Dr. Newcomb presents a subject he usually does it so concisely and thoroughly as to leave little to add. He had seen that afternoon in a clinic a child whose sister gave a history that she had been under treatment for some time and her nose scraped for what had been suspected to be a hematoma, but which proved to be a foreign body, which was removed.

The number of cases of abscess of the septum in comparison with the total number of nose cases is remarkably small, and yet he believed that the average in the dispensary is usually six cases in a year. Practically all the cases that he has seen of late years have been double. One case that he had seen in the New York Eye and Ear Infirmary occupied only one side. He had found that the best way to treat such cases after the incision was by the application of pure carbolic acid. A case that he had seen lately, which was practically the result of an abscess of the septum was that of a handsome young lady who was brought to him with a history of perforation of the septum and who had been told that she was threatened with a sinking of the nose and consequent deformity. There was a very large perforation, and at first he suspected a specific lesion, but a careful examination was made, and after consultation with her physician this was positively excluded. The history was that as a young girl she had a fall, followed by abscess of the septum, and this was doubtless the cause of the destruction which followed in the cartilage. Here was a case of perforation of the cartilaginous septum, but not of the bony septum, where the condition might easily have been mistaken for a specific lesion. The deformity that follows in most of these cases can be prevented by early incision and careful subsequent treatment. If they are promptly diagnosed and opened promptly, subsequent deformity would be avoided.

DR. DELAVAN said that in his experience the number of so-called idiopathic cases of abscess of the septum had been small compared with those produced by traumatism or by specific disease. In most of the cases observed the abscess is bilateral. A point in regard to treatment which had not been suggested was that in most cases more or less perforation of the cartillaginous and bony septum has already occurred by the time the abscess is opened. In a bilateral case one is obliged to make two incisions, one on each side of the septum, through the mucosa. In making these two incisions it is often found that the septum is perforated. In order to secure free drainage and permit the retention of the drainage medium, he has fol-

lowed the very easy and effective method of passing the drainage material through the septum from one side to the other, at the same time treating each abscess cavity as the case seemed to demand. By using horse hair, or several strands of silk or of lampwick, or some such material, the two openings could be kept successfully open, while there is no danger of the displacement of the drainage medium. The cases vary greatly in the extent and degree of destruction of septal tissue, as well as in the size of the abscess. While this method of drainage would not answer for all cases, as the main feature for securing drainage he has found it valuable.

Dr. Carter said that his experience in regard to hematoma and abscess of the septum had been limited, but that he is inclined to think that it is of more frequent occurrence than one is led to believe from the accounts in the recent books on rhinology. During the past year he has seen four cases at the Manhattan Eye, Ear and Throat Hospital, and two in private practice. Dr. Newcomb had made no reference to post-operative hematoma, this has assumed importance because of its occurrence, according to some writers, after the sub-mucous operation. In view of the popularity that this procedure has gained, a discussion of the subject of hematoma of the septum would be incomplete without reference to this accident. Two years ago, in a paper read before the Section, Dr. Carter outlined a technique that greatly minimizes the possibility of hematoma in connection with this operation—he does not attack the incisor crest unless it is absolutely necessary; he thus avoids wounding the arteries contained in the Anterior Palatine canal. The danger is not from the primary hemorrhage, but from the secondary hemorrhage, the blood accumulating between the layers of the mucous membrane, forming a hematoma. If this remains, or if it should become infected, there is very apt to be a flattening of the nose later on. In his own experience, Dr. Carter has never had a case of hematoma of abscess of the septum following the sub-mucous operation. He wished to emphasize the statement that he made two years ago; that it is best to avoid removing the incisor crest, but if it must be removed, the nose should be tightly packed beyond the wound, so that in case of secondary hemorrhage, the blood can easily escape from the operative wound and not accumulate between the layers of mucous membrane.

Dr. Carter's results have been excellent and he has made no change in his technique as described in the Laryngoscope of June, 1906.

Dr. Thurber said that at the Vanderbilt clinic they see from six

to eight cases of abscess of the septum each year, perhaps one of them being in a woman. The cases are usually bilateral. He used a folded, narrow, rubber tissue drain until there was no more discharge. Nearly always there is more or less permanent thickening of the septum. Most patients fail to return after their nasal obstruction has been relieved, and for that reason the treatment was rather unsatisfactory.

DR. MCCOY said that a point in the etiology of such cases had been brought to his mind by a case seen not long ago. The patient had extensive swelling of the mucous membrane in the floor of the nose on both sides, without being able to trace the cause. It was tender and painful, and there was a pale, boggy edema. She was seen later and her upper front teeth were found loosened. She had Riggs' disease, which had found its way into the floor of the nose. He did not remember how many cases of abscess of the septum he had seen, but the last half dozen cases seen were recent ones, of not more than a weeks' duration, and he had obtained quick healing in every case. He made a good wide opening on one side, cleansed the cavity and applied pure carbolic acid within the cavity. He then tamponed both nostrils with bismuth subnitrate gauze, so as to force the laminæ of the septum together. This was removed at the end of four of five days, and in every case primary union resulted, with a straight septum. This treatment would also apply to hematoma. He would not care to employ this treatment where the cartilage was extensively necrosed, but in these cases there was pus or blood between the layers of the septum. The treatment resulted in quick and satisfactory cures..

DR. CHAPPELL said that he had had six cases, one of hematoma, five of abscess, all bilateral. Like Dr. Delavan he had some difficulty in securing proper drainage, and following a somewhat similar plan had used an aneurysm needle to pass the drain between the mucous membrane and the cartilage and then down the other side, washing the wound every day and removing the drain on the third day. In a week the cases were usually well without any perforation.

DR. MCCULLAGH reported a case of septal abscess in a tuberculous child. It was a traumatic case resulting in bilateral abscess. It was opened freely on both sides. The mother brought the child for treatment of the external deformity which was already beginning to be noticed, rather than for any trouble in the nose. Two or three weeks previously the child had fallen against the edge of a chair, and when brought in for treatment the deformity was already beginning to be noticeable.

DR. FREUDENTHAL said that he had only seen two cases in his private practice, but in his dispensary work in one of his clinics in the dirtiest part of the city, there is hardly a month that he does not see one or two cases of abscess of the septum and they are almost invariably due to traumatism. His treatment is very simple and he almost invariably secures good results. As soon as a case appears he makes a thorough incision on both sides, and tells the patients to make hot applications and the result is usually quite satisfactory. The cases which come back show mostly good results, but some have to be incised again.

DR. ABRAHAM inquired whether he was correct in understanding Dr. Newcomb to say that he never packed the abscess cavity, to which Dr. Newcomb replied that he had tried doing so, but had not been able to succeed in having the packing retained until the patient returned.

Dr. Abraham said that he had on an average five or six clinical cases a year, and in all, about five private patients. Recently while on a visit to Alabama he had seen another case. Dr. T— was hunting on horseback, and his horse stumbled, threw his head back, and struck the doctor on the nose. An abscess resulted, and when Dr. Abraham saw him he had a temperature of 103°, and a deformity was apparent just below the cartilage. The incision was made larger and the cavity curetted, and a pyogenic mass was removed, and particles of the cartilage came away like little rice seeds. This was three days after the abscess was opened. The wound was treated with pure tincture of iodine, making sure that it penetrated every nook of the cavity. Small strips of gauze were carried into the abscess, and it was packed with small strips to hold it in place. He uses this method constantly, and never has any trouble in keeping the packing in place, but he relies very much on the iodine.

In 250 cases of submucous radical and flap operation he has not seen over two cases of hematoma, and he attributes this satisfactory result to his method of packing the nose with iodoform gauze wrapped with gutta percha tissue.

DR. NEWCOMB, in closing the discussion, said that he had learned a great deal from the discussion, and was very glad that he had brought the subject up. He may have failed to make his statement clear about the horsehair. The method was simply to make a little loop and slide it up through the incision and pack against the mucosa. This holds the loop in place.

In regard to the bilateral character of these lesions—he had had only one patient with trouble on one side of the nose. In looking up the subject originally when he first saw a case of abscess of the septum, he had received the impression that the destruction of the cartilage was a very rapid process and that one had to be very prompt in the treatment or deformity would immediately follow. He had not found this to be the case. A case seen a year or a year and a half later might show some deformity, but the speaker had modified his ideas on this point very decidedly.

Dr. Carter's remarks on hematoma after submucous resection were extremely timely and appropriate. As Dr. Freudenthal said, these cases are extremely difficult to follow up, for the patients stop coming as soon as they can breathe through the nose.

Dr. McCoy's case of abscess resulting from Riggs' disease was very interesting. He himself had seen no such case, nor had he found reference thereto.

Dr. McAuliffe's case was unique in the position of the abscess. Most of them are low down anteriorly.

In regard to Dr. Freudenthal's simple incision, it had been his experience that where that alone was done the opening closed up and there was a reaccumulation of pus.

He has used the galvano-cautery in these cases and presumed that the iodine acts on the same principle.

Exhibitian of Forein Body Removed from the Bronchus. By SIDNEY YANHAUER, M. D.

Dr. Yankauer stated that the child from whom the foreign body had been removed gave the following history: The boy, five years old, had been eating pumpkin seeds, and had inhaled part of one. He was immediately seized with a fit of coughing, which soon subsided; following this accident a spasmodic cough, croupy in character, set in, accompanied by fever. The child was taken to the hospital, where an attempt was made by the attending laryngologist to introduce the Jackson bronchoscope, for the purpose of removing the foreign body. For some reason this attempt was unsuccessful, and the fever, and physical signs of consolidation in the right upper lobe, which had existed before the operation, continued. About a week later, on the eighteenth day after the inhalation of the foreign body, Dr. Yankauer was asked to see the case.

Fortunately the difficulties which had been met with in the first attempt were not experienced by the speaker. Under chloroform anesthesia, a Killian bronchoscope seven millimeters in diameter and twenty-eight centimeters long, was easily introduced through the larynx, and advanced as far as the bifurcation without seeing the foreign body; the instrument was then advanced into the right bronchus, which it entered easily. At a distance of twenty-two centimeters from the upper teeth the foreign body was seen; it lay in a favorable position for extraction, the greater part lying directly across the lumen of the bronchus, the remainder, about one-third, being folded upon itself and lying in contact with the posterior wall of the bronchus. It was seized with the Killian forceps and withdrawn, and was found to correspond in structure and form to about one-fourth of the shell of a pumpkin seed. It was irregularly oblong in shape, twelve millimeters long and eight millimeters wide. It lay a little below the middle of the bronchus, in a position corresponding to the point of origin of the first bronchus of the second order, the one which supplies the righ upper lobe. The time occupied in this portion of the procedure was about four minutes.

Upon examining the bronchus after the removal of the shell, a white body, five millimeters in diameter was seen deeper in the bronchus, which looked like a part of the pulp of the seed. An attempt to remove it with the forceps was unsuccessful, as the bronchus became conically smaller below the end of the bronchoscope, and the forceps was too wide to reach the bottom; the Lister hook was also tried with the same result. A wire with smooth rounded end was then introduced, in order to tease the mass up into the bronchoscope, but as soon as it was touched with the wire it was broken into several smaller pieces. Some of these were coughed

The bronchoscope was now removed, the entire time occupied from the beginning of the introduction to the end of the procedure up, the rest were removed with a cotton swab.

The bronchus was again inspected. Its mucous membrane was congested, the openings of the secondary bronchi were narrowed (about one millimeter), by the swelling of their lining.
being less than nine minutes.

Dr. Yankauer stated that he had not seen the patient since, but the subsequent history is as follows: Immediately after the removal of the foreign body the signs of consolidation over the upper lobe disappeared and the temperature became normal. After forty-

eight hours the temperature again rose to 103°, and signs of pneumonia appeared over the right middle lobe. These symptoms continued unabated for two weeks, when a needle was introduced in the middle of the area of consolidation and pus was found. It was decided to perform pneumotomy. An incision was made over the eighth rib and one and one-half inches of the rib removed. Upon opening the pleura no pus was found; the surface of the lung looked normal; the lung was only partly retracted. A blunt instrument was introduced into the lung, into the wound made by the aspirating needle, and at the depth of about one inch pus was encountered. The wound was enlarged, a drainage tube was inserted into the lung, and the pleural cavity isolated by packing iodoform gauze around the drainage tube. About six ounces of pus were evacuated.

Following the operation considerable pus was discharged through the tube, but only once was pus expectorated. At the present time, twenty days after the removal of the foreign body, the temperature is 102° to 103°, respirations 45 to 50, pulse 110 to 130. The general condition is fair and the prognosis doubtful.

The case is of special interest because the foreign body lay directly over the opening of the first division of the right bronchus, leading to the upper lobe, and caused occlusion of this bronchus with signs of consolidation (atalectasis). It is probable that during the operation of removal a portion of the pulp was inhaled into the bronchus leading into the middle lobe, and was the cause of the abscess in the lung tissue in this lobe.

DISCUSSION.

DR. EMIL MAYER said that this case teaches the importance of the early removal of foreign bodies, especially those which have a tendency to swell. He had emphasized this point in an article some time ago. The only fatal case that he had had was one in which a bean had been inhaled, in which the child died of pneumonia subsequent to removal. This case had taught him the danger of delay. It was of the greatest importance to know the nature of the foreign body, in cases where one is called upon to decide whether the immediate removal is imperative or whether one can wait.

DR. YANKAUER replied that this had not been done. The pulmonary pleura was not adherent to the parietal pleura, and it was

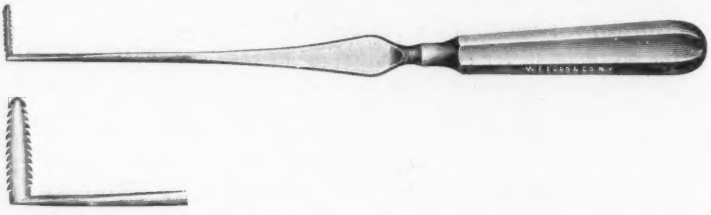
not sutured thereto. It was merely opened and the wound packed. The doctor was asked if the general pleural cavity had become infected, and he replied that it had not.

Of the various vegetable seeds and kernels, the most dangerous one encountered in the lungs is the bean; it has a thin shell, and its pulp swells up into a semi-solid mass. When it is seized in the forceps the shell breaks and the pulp is scattered throughout the bronchial tree with the next inspiration. The peanut is not nearly so dangerous, as its pulp retains its coherence for a long time. In a case reported here a short time ago, the peanut kernel was broken and the separate pieces removed, the patient making a rapid recovery. While the foreign body presented to-night, a pumpkin seed, is not a common article of diet, it is interesting and important to know how it behaves when inhaled; evidently its pulp becomes very soft, like the bean. It is, therefore, a dangerous substance to inhale.

PRESENTATION OF INSTRUMENTS.

Exhibition of New Tonsil and Pillar Separater. By JOHN McCOY, M. D.

This instrument was devised to separate principally the adherent anterior pillars of the fauces from the tonsil, and to accomplish



this with as little hemorrhage as possible, so as to prevent obscuring the field of operation in tonsilotomy.

It consists of a blade at a right angle to the handle. On each side of the blade are a number of saw teeth which point at an angle toward the handle. The saw teeth are somewhat sharp on their presenting faces. The teeth are so arranged that one side of the blade can be applied to the left pillar and tonsil, and the other side to the right pillar and tonsil. The handle has a wide flare at its mid portion so as to give purchase to the index finger for pushing.

The instrument is used in the following manner: The blade is

pushed well into the supratonsillar fossa, it is then rotated downward to the tongue, and is pushed through the adherence, *in a direction toward the opposite tonsil.*

I have been using the instrument for some time, and it has given me great satisfaction, both in thoroughly separating the pillar and tonsils, and also in the diminished amount of bleeding that ensues. This is not inconsiderable where a sharp knife is used.

Demonstration of New Method of Introcing a Posterior Tamponnade. J. WOLFF, M. D.

DISCUSSION.

DR. MCCULLAGH called attention to a somewhat similar method of packing the posterior nares or nasopharynx, devised by Dr. Roof,—which consists of a strip of gauze, to one end of which a strong piece of silk thread is fastened in such a way as to leave the two ends of equal length. One end of the silk is then threaded on a needle and long stitches are taken in the gauze until the whole strip is threaded. By means of this device the nasopharynx can be packed very easily through the nose, and the packing does not have to be dragged through the mouth.

The knotted end is introduced into the nasopharynx through the nose, the free end of the silk thread hanging loosely from the nose, while the gauze is passed along the other thread, which is held fairly taut. This thread is pulled on at times to pack from behind. When sufficient gauze has been inserted, the two ends of the silk thread are tied over the gauze, thus eliminating any danger of the packing dropping back. For removal the thread is cut, and the gauze comes away in a single strip. Dr. McCullagh said he had used this method two or three times, and had found it very rapid and effective.

Presentation of a Number of Historical Instruments, the Gift of Dr. N. S. Jarvis. By D. B. DELAVAN, M. D.

DR. DELAVAN presented a number of instruments, the gift of Dr. N. S. Jarvis, of the U. S. Army. These were pioneer instruments devised by his brother, the late Wm. Chapman Jarvis, of New York City, and mark the beginning of certain familiar processes which are now commonly employed. Dr. Jarvis was the first to use chromic acid in the treatment of the upper air passages, and devised the well-known method of fusing a crystal on the tip of a

probe. Among other early instruments here shown were a variety of nasal cutting forceps, the original Jarvis snare, a self-retaining nasal speculum, a rhinoscopic mirror, nasal scissors, a septum-metre, nasal splints, and instruments for straightening deflection of the septum, etc. All of these instruments when devised were great improvements over the methods generally employed at the time.

A New Adenoid Curette.

DR. HERZIG presented a new adenoid curette with three edges, thus enabling one to remove the lateral masses with a single sweep of the curette, and then to remove the main masses.

DR. FREUDENTHAL said that he had tried this curette and found it to work very well indeed.

A Modified Spectacle Frame for Supporting a Face Mask.

DR. J. E. NEWCOMB presented a modified spectacle frame, devised by Dr. Johnson of Manchester, England, which had been described in a recent number of the *Lancet*. In this frame the upper half of the rim was removed, while the lower halves dipped down on the cheeks and were united across the bridge of the nose. Over these lower halves a pad of gauze could be folded so that it would be supported over the face below the eye level, and at the same time afford free access of air to the nose. It was efficient for its purpose, and at the same time very cool and comfortable. It was quite out of the way of the head mirror in nasal work. It was so simple that one could easily be made with a piece of stout copper wire and a pair of pliers.

THE AMERICAN LARYNGOLOGICAL ASSOCIATON.

Twenty-ninth Annual Congress. Washington, D.C., May 7 to 9, 1907.

A. W. DeROALDES, M. D., President.

(Continued from the February number, page 160.)

CONTINUATION OF DISCUSSION OF DR. COAKLEY'S PAPER.

DR. A. COOLIDGE, Jr.: My experience has been largely with Dr. Clark, and I have nothing in which I differ with him at all. Papilloma cases are divided into two classes: those in children and those in adults. Each class presents a different problem. I have failed to see a case in an adult not easily kept down by intra-laryngeal methods, and it seems to me that the direct method is the preferable one. In children the problem is different. Up to the time of the introduction of Prof. Killian's tubes the conclusion that I reached was that the best treatment is to do a tracheotomy and leave the tube in. Afterwards, if the tube is taken out, there is often a recurrence; and a second tracheotomy must be done, which is worse than if the tube had been left in for years. The question of leaving the growth alone after the tube has been put in must be settled according to circumstances; but it is never advisable to go into the larynx, unless considerable can be got out with but little trauma. This can be done better with Killian's tubes than with any other single instrument. Consequently, after the introduction of the tracheotomy-tube, we can keep the larynx clear better by the direct method than we could before its introduction. I do not know whether the use of the straight spatula in children is going to make it possible to do away with tracheotomy. Dr. Ingals thinks it better to do it, even if the direct method has been used. It seems to me that we may get rid of the necessity for doing a previous tracheotomy by acquiring better technique and a better knowledge of Professor Killian's method.

DR. SAMUEL W. LANGMAID: I happen to have brought with me something that illustrates what Dr. Coakley and the other gentlemen have said. I had intended to exhibit it as a pathological specimen, but if I may be allowed to illustrate what has been said by this I shall do so.

I agree with Dr. Coolidge that we must distinguish, in treating papilloma, between the cases of adults and of children; and with Dr. Castleberry, especially when he says that circumstances modify cases—the circumstances of the age of the patient, his temperament, our own convenience, etc.

My case illustrates several points; in the first place, the recrudescence of the growth. It is impossible that all that could have existed originally. I had the pleasure of showing it to Dr. D. Crosby Greene, of Boston.

The patient, a man between 20 and 30 years of age, came to me with a large papilloma on the tracheal side of the epiglottis, and with the larynx pretty well filled up. I examined him for quite a number of days, and found that the growth was increasing. I began to operate with the ordinary canula-forceps; but the tumor increased faster than I could get it out. At last it occurred to me that in condylomata nothing is so good as a mixture of alum and powder. I used this, and the growth seemed to halt. I have been three years in getting it out. It has been done at my convenience, and with very little expense to the patient; and the result is perfect. He has come, perhaps, every fortnight or every month. Then I used another remedy in the intervals. He was to spray his larynx thoroughly during these periods, four or five times a day, with a strong solution. I cannot help thinking that both these remedies were better than anything else I know of. At last, I think it was in December, but one growth remained, which was about in the middle of the right cord. That I took out, and this has been the end of the trouble.

In speaking of circumstances, it should be said that this man never had dyspnea, except on rapidly going up stairs—why, I do not know. When I got down to the cord, I found that it did not make the excursion that it should. The cough was very little, and there was no dyspnea. Had there been dyspnea, this protracted method would have been quite wrong. Larger growths than this have been shown to this society, but this is large enough to answer the purpose of illustration.

I wish to endorse Dr. Clark's paper, which pleased me very much. My first belief in the value of that method of treatment was founded upon but two cases, one being a quite interesting one in which, after I had done a tracheotomy, in the child, who was then

5 years old, every papilloma had dropped off by the end of the succeeding five years. I saw the patient during his trips through Boston, and found that there had been less and less of the growth. All had dropped off until nothing remained. I then did a plastic operation, and the case was over.

Dr. D. Bryson Delavan: I think that in studying this subject we are impressed with two facts; the inveterate tendency of the growths in children to recur, and the means employed to keep the larynx open; the long-continued wearing of the tracheotomy-tube, and its effects on the larynx and the upper part of the trachea. The treatment of no case should be undertaken without a full understanding of the first proposition. We know of no means, nothing has yet been suggested, by which papillomata can be properly treated and absolutely prevented. Attempts have been made, and with mild cases have often succeeded. I have described a method, and so have others, whereby the local application of certain medicaments to the larynx has cured papillomata; but in other cases it is impossible to obtain such a result by this means. We have, therefore, to resort to operation. Having the probability of recurrence in view, the mechanical method chosen should be selected with great care. Dr. John Rogers, of New York, has pointed out the conditions that arise from the long-continued wearing of the tracheal canula. He has shown that various deformities caused by this occur, and that these deformities are extremely difficult to treat. The various strictures that take place in certain localities that the tube touches are very difficult to overcome. It is certainly most gratifying that removal of these growths without tracheotomy can now be accomplished in some cases. This first case of the kind that I remember in this country was described by Dr. Cooper a number of years ago. In this case he removed a large growth completely. It is gratifying that we have given to us so admirable a means as that described by Professor Killian, which marks a great advance in the local methods of dealing with these conditions. In no circumstances should a case be considered as cured until a long time has elapsed, in which the patient has been kept under observation to prove the disappearance of the growth for all time.

Dr. Thomas Hubbard: I hope that Dr. Coakley, in closing the discussion, will express his opinions as to the post-operative treatment of cases of papillomata of the larynx. I do not think he spoke of this at any great length. I had an opportunity to ex-

amine a case operated on many years ago, in which I had used a fenestrated tube made after the O'Dwyer tubes, but not by the direct method. With this instrument I could see the growth distinctly. I removed it with the forceps and the curette, and subsequently used trichloracetic acid. The growth, which had occupied the anterior third of the larynx, was examined in the Pathological Department of the Manhattan Hospital, and was reported to be probably malignant. In the many years that have since elapsed, the growth has not recurred; and the patient has a perfect voice. Examination a few days ago, however, showed a small papilloma about the left vocal cord. This is probably not a recurrence of the original growth.

DR. J. H. BRYAN: I want to ask about the strength of the cocaine used in these cases, and whether serious results have followed its use.

DR. J. M. INGERSOLL: I have had a little experience with the X-ray that seems to have been favorable. I have at present under my care a young girl in whose case, thinking the growth would recur, I tried the tracheotomy tube, which she wore about a year. Then I began to use the X-ray every day, and the growth commenced to disappear. This disappearance led me to think that such growths might be favorably operated upon by the direct method. On account of the bleeding and the consequent use of cocaine and adrenalin, I operated under general anesthesia. I could not remove the two growths completely, and a small part of each was left. This was eight weeks ago. Since this, the growths have disappeared under the use of the X-ray. This suggests that the X-ray may overcome the tendency to recur. There is a third growth in this case, upon which I shall soon operate.

DR. C. G. COAKLEY, closing: I thank the gentlemen very cordially for their very kind expressions regarding my paper. It was written simply with the wish to introduce this method to the attention of the men here; for I believe that it is of some importance. It will not cure every case of recurrence, however. The first case, operated on in October, showed a subsequent slight increase. There had been a small part of the growth left, and this has grown; but not so much as one would expect. Some papillomata grow more rapidly after any form of treatment. My other cases are too recent to tell whether there will be a recurrence or not. In none of them did I feel that I had absolutely cleared out all the growth. I

could not get all out; because, towards the end of the operation, small pieces are obscured by the slight amount of bleeding that occurs, and one cannot differentiate between these little pieces of papillomata and the mucous membrane. Claim this procedure to be a radical cure, I cannot; but it is safer than any other method of instrumentation, and one can do more at a time by the introduction of these tubes than by any other of the older methods by means of the indirect illumination with a mirror. One can do more, and with a great deal more safety to the patient. With the other method, it has occasionally happened that I have taken away some of the healthy mucous membrane or of the cord, and other men have had the same accidents. Some of the parts not meant to be removed were caught in the forceps and taken out. This danger is entirely done away with by this method. The parts are quiet, and the only trouble is that one cannot be sure that one has got all the growth out at the close of the operation.

I believe that the cases of recurrence in children are cases in which new papillomatous areas occur. This happened in Case No. 4. New areas would crop up in the larynx, in spite of everything I could do. Just during the last few days an area developed, which grow very rapidly; and I did not know how big it would have become before the voyage across the water was completed. I felt ashamed to think that Dr. Killian would find there a large papilloma. The growth was merely the size of a pea when the patient left, and nothing had been done for more than a month previously.

In these cases of papillomata in children, we are dealing with cases that will frequently recur; and I do not consider any of the patients as cured. I should not do so, unless they had remained free from the growths for several months.

I think that Prof. Killian has put the right emphasis on the discussion when he said, "if we see the cases early enough." I believe that it is going to be possible in most of the cases to avoid the deformity of an external operation. Well-to-do people would do anything to avoid having a thyroidotomy or a tracheotomy performed upon any of their daughters. I think that tracheotomy, by giving rest to the larynx, is an aid in causing the disappearance of the growths; but it is a question whether the parents of such children would desire to have a tracheotomy, with the disadvantages caused by it in after life. A tracheotomy-tube worn for years is going to leave some stricture. There is bound to be some thickening, though

it may not be enough to give much trouble. It is, however, to be considered. If you see these cases early enough, before the entire larynx is filled so that the dyspnea is great, this method should be the method of choice; and in such cases I always advise this method of removal. On the other hand, if the growths are large, one should not give an anesthetic without having a tracheotomy-tube handy, and being ready to do an immediate tracheotomy; because the tissues are relaxed and the growth often seems to fall down and fill the glottis, so that it is dangerous procedure unless one is prepared to do a tracheotomy at any instant.

A ten per cent solution of cocaine will be sufficient, if one waits long enough for it to act. That is my idea in applying the cocaine before the administration of the anesthetic. The weaker solution will then give as much result as would a twenty per cent or a saturated solution. I have been asked whether I am not afraid to give cocaine in connection with chloroform. I have given it a number of times without bad results. In two of the cases, as I finished up my work, I took a cotton applicator, dipped it in pure carbolic acid, and touched the bases of these masses. I do not know that this did any particular good because in Case 4, that of the young lady who went abroad afterwards, the growths returned over some of these areas. I cannot say, therefore, that the carbolic acid did much good. I think it is perfectly harmless, but I should not use it unless the patient had had a tracheotomy. I should be afraid that it would render the performance of a tracheotomy necessary. The advantage of this type of work is that one can, in some cases, save the patients from the necessity of tracheotomy.

Ophthalmological Manifestations of Latent Disease of the Nose and Its Accessory Sinuses: Report of Illustrating Cases. By FRANCIS R. PACKARD, M. D., Philadelphia.

(*Published in full in* THE LARYNGOSCOPE, *October 1907, Page 788.*)

DISCUSSION.

DR. J. H. BRYAN: I have been very much interested in this paper, and am delighted to find that the eye in relation to disease of the accessory cavities is commencing to receive consideration. It has been my practice always to have an examination of the eye made by a competent oculist. I have had some of the most remarkable complications shown in the eye itself. In a paper read before the American Medical Association, I detailed some very interesting cases: sphenoid cases resulting in paralysis of the exter-

nal recti and scotomata, narrowing of the visual fields, and bulging pressure of the eye in various directions. They all showed that the eye, from the diagnostic standpoint, is a most important thing; and if men interested in the subject of the accessory sinuses will submit the patients to a thorough ophthalmological examination, they will often find the result of this examination a great aid, not only in those cases in which the disease is well marked, but even in those in which it is merely suspected.

Dr. George A. Leland: I do not think that Dr. Packard has any need to apologize for having read this paper; for we are beginning to find that troubles in the eye are largely dependent upon varying intranasal pressure; not always where the necessary sinuses are diseased, but also in cases in which there is a malposition of the septum or of the turbinal bodies.

There are three cardinal symptoms that point directly to the intranasal conditions for their origin. The first is astygmatism against the rule. When one finds this, one usually finds that the intranasal lesion is the cause. There is also a ciliary reflex. This has occurred in my practice quite a number of times, when the oculist has fitted many different kinds of glasses. In one case, he fitted seven different lenses to correct an astygmatism that varied with different kinds of intranasal pressure. I did a slight burning of the cushions of the septum, and later the patient required no glasses at all; and he has worn none since.

Then we have a narrowing of the color-field. It has been frequently my experience to have cases in which the ordinary fields diminished somewhat, but the color-field diminished greatly. One lady had been an invalid from the age of fourteen years to that of fifty, all on account of her eyes. The color field was so much diminished that when she looked at her Italian garden, it appeared to her as if she were looking at it through a hole in a board. After the intranasal pressure had been removed, the whole garden came into view. That case I would summarize a little. I will just read the summary that Dr. Haskell has got out, which will give the major points of the cases in which the eye is affected so much by the nose. It is a good thing for us to find out from a rhinologist the confirmation of our point of view that so much of the trouble in the eyes is due to the nose. When this is generally realized, we shall have less people having defective eyesight.

This is the lady who began to suffer at the age of ten or twelve years, and had to stay in a darkened room for two or three days of

every week or fortnight, on account of the terrible headache that prevented her from reading, looking at pictures, or conversing with other persons. The pain, tension, and lowered vision, and the contracted field included all the symptoms of glaucoma except the copying of the disk. They were all temporarily relieved by the use of Filocarpin, etc. There has been no recurrence since the intranasal contacts have been done away with.

She was first operated on in March, 1898. This had to be repeated several times; until finally I gave up in despair of being able to do anything without removing both turbinates. Another thing peculiar about the case was the pain in the left side of the head that sometimes appeared after an operation on the right side. There was myopic astygmatism of the axis, the amount of which varied in the right through an arc of 90°, and in the left through 25°. These variations were most marked after operations on the nose, or when pressure in the nose was increased by swollen turbinates. The refractive error of the right eye disappeared entirely, so that the axis came just where it should have been; and that of the left diminished 25°. She was last seen more than five years after the last operation, and had remained quite well ever since. The extremely neurasthenic condition found in many of these cases is very much relieved after the operation. This patient became so much improved that she often forgot herself and read or wrote for a long time. Once she numbered all the checks in a check-book, and had no trouble resulting. I think we have this paper in good time. In fact, it is too timely; because I wanted to write on the subject.

Dr. L. A. Coffin: I want to congratulate Dr. Packard on being so early in the field. I am rather chagrined that I have been working for so many years in an institution in which we have both these specialties, and yet the relation between them has not been appreciated there. At a meeting of the Section of Laryngology at the County Medical last winter, Dr. Posey read a paper on the subject, and said that laryngologists are rather opposed to admitting the relationship; and I stated then that we had come to recognize the relation between the nasal and aural disease largely through our patients, who, without solicitation, had informed us that after a certain amount of work done on the nose the ears had improved, and they had been forced to appreciate the relation. I had never, however, had that made apparent in regard to the eye.

It was not a week after this meeting that a patient upon whom I had lately operated for sinus-disease voluntarily said to me: "Doctor, I am now able to lay aside my glasses." He is still getting along without them. We often find in sinus work that certain ocular conditions clear up after the removal of the pressure. Dr. Posey was so rapid in reporting his cases that I could not think of all I wanted to say. I wish to say now that I am a convert to the belief in the relationship.

Dr. J. W. Farley: Speaking of Dr. Packard's being one of the first in the field, I should like to call attention to a paper written by Dr. Sluder, of St. Louis, which appeared in an ophthalmological journal. This paper was published five years ago, and it appealed to me. He is not a member of this society, and able to report his own cases; so I should like those here to refer to the paper, and find that the same thing has been observed when there was no sinus-disase.

Dr. F. C. Cobb: I read a short paper on the subject a year ago, and I wish to call attention to what I think is a mistake on the part of Dr. Leland in saying that the oculists in Boston have not taken much pains with it. I know of three or four papers beside the ones mentioned that have treated it in that way.

That in cases of sinus-disease, such as we have heard to-day from Dr. Packard, conjunctivitis arises through direct infection from the nose to the eye, there is plenty of evidence. With regard to astygmatic affections, there is little satisfactory evidence. The cases that have been reported are, as Dr. Leland says, possessed of a tremendous neurasthenic element; and I think that when cases in which pressure in the nose, without disease of that organ, is supposed to affect the eyes are investigated, we should be very careful to eliminate the neurasthenic element from the question before deciding on a scientific basis how much pressure-points affects the eye.

Dr. H. P. Mosher: So far as I know, ptosis is a rather unusual symptom of latent disease of the frontal sinus. I have had it occur once, first on one side and then on the other. It was first noticed on the left side, with acute trouble. If anyone knows of another such case, I should like to hear of it.

As to weakness of vision due to trouble in the sinuses or the ethmoidal region, I have come to the conclusion that in unexplained trouble with the eye, an examination with the X-ray will, in many cases, clear up the condition. When this is done, one will often

find that it is an ethmoidal condition that has given no signs in the nose.

DR. A. COOLIDGE, JR.: I wish to say, for the information of some of our Fellows, who do not seem to know the literature of the subject, that the relation of the eye to sinus-disease has long been recognized. Dr. Fish, of Chicago, Kocher, and dozens of other writers have called attention to it. The eye-symptoms, as named in Dr. Packard's paper, have been known to be associated with sinus-disease for a long time. Dr. Coffin spoke of Dr. Packard as a pioneer. I do not wish to rob him of this honor, because he is one of the pioneers; but I merely wish to remark that the subject has long been written on.

DR. L. A. COFFIN: I know that as well as Dr. Coolidge does.

DR. GEO. A. LELAND: The paper that Dr. Farlow has referred to was instructive to me. I had the pleasure of going to Dr. Sluder's office and looking over the specimens he has. They show that with those long Killian forceps we can see the attachment of the second turbinates, and in some cases over the second turbinate this ethmoidal tumor pressing upon the turbinates. I wish to give credit to Dr. Sluder.

DR. F. R. PACKARD, closing: I wish to say I have not gone into the literature of the subject in the paper. I merely wonted to present to rhinologists the findings of an ophthalmologist in a definite series of cases. The cases were all latent, none having presented manifest nasal symptoms; and I thought it interesting to know just what an oculist had found in his examination in such cases.

(*Proceedings of the American Laryngological Association to be Continued.*)